



**U.S. Department of the Interior**
Bureau of Land Management
Wyoming State Office

Rawlins and Rock Springs Field Offices May 2004

# FINAL
# ENVIRONMENTAL IMPACT STATEMENT
# Desolation Flats Natural Gas Field Development Project
## Sweetwater and Carbon Counties, Wyoming

MISSION STATEMENT

It is the mission of the Bureau of Land Management to sustain the health, diversity, and productivity of the public lands for the use and enjoyment of present and future generations.

**BLM/WY/PL-04/026+1310**

# United States Department of the Interior

BUREAU OF LAND MANAGEMENT
Wyoming State Office
P.O. Box 1828
Cheyenne, Wyoming 82003-1828

In Reply Refer To:

1793 (930)

May 28, 2004

Dear Reader:

The Bureau of Land Management (BLM) has prepared this Final Environmental Impact Statement (FEIS) to document and disclose the results of an environmental analysis of an application received by the BLM to drill for and produce natural gas from leases within the Rawlins and Rock Springs Field Offices as detailed below. A copy of this document is provided for your review and comment. The FEIS may be reviewed on the BLM Wyoming homepage (*www.wy.blm.gov*). Copies of the FEIS also are available for public inspection at the following BLM offices.

| | | |
|---|---|---|
| Bureau of Land Management<br>Wyoming State Office<br>5353 Yellowstone Road<br>Cheyenne, WY 82009 | Bureau of Land Management<br>Rock Springs Field Office<br>280 Highway 191 North,<br>Rock Springs, Wyoming 82901 | Bureau of Land Management<br>Rawlins Field Office<br>1300 N. Third Street<br>Rawlins, WY 82301 |

A Draft EIS (DEIS) was published in April 2003, and the 60-day comment period ran from May 01, 2003, to July 1, 2003. One hundred and eighty one-letters to the DEIS were received during the comment period. Formal public hearings were held on June 7, 2003, in Rawlins, Wyoming, and June 8, 2003, at Rock Springs Wyoming, to receive oral comments on the DEIS. No comments were received from the public at these hearings. Comment letters are included in the FEIS package in Section 4, and BLM responses to those comments in Section 5 of the FEIS.

The BLM will accept public comments on the FEIS for thirty (30) days commencing on the date the Environmental Protection Agency publishes a Notice of Availability in the *Federal Register.* BLM will post the publication and closing dates for comments on its internet site when the precise date of publication is known.

If you wish to comment on the FEIS, your comments should relate directly to the document. We request that you make your comments as specific as possible and that you cite the location, or locations, in the document on which you are commenting. Substantive comments should: (1) give any new information that could alter conclusions; (2) show why or how analysis or assumptions in the FEIS are flawed; (3) show errors in data, sources, or methods; or (4) request clarifications that bear on conclusions. Comments that contain only opinions or preferences will not receive a formal response. However, they will be considered and included as part of the BLM decisionmaking process.

This FEIS was prepared pursuant to the National Environmental Policy Act and applicable regulations, and other applicable statutes, to address possible environmental and socioeconomic impacts that could result from this project. This FEIS is not a decision document. Its purpose is to inform the public and the agency decisionmakers of the impacts of natural gas exploration, development, and production within the Desolation Flats Project Area.

*Freedom of Information Act Considerations*: Comments, including names and street addresses of respondents, will be available for public review at the addresses listed above during regular business hours (8:00 a.m. - 4:30 p.m.), Monday through Friday, except holidays. Individual respondents may request confidentiality. If you wish to withhold your name or street address from public review or from disclosure under the Freedom of Information Act, you must state this prominently at the beginning of your written comment. Such requests will be honored to the extent allowed by law. All submissions from organizations or businesses, and from individuals identifying themselves as representatives or officials of organizations or businesses, will be made available for public inspection in their entirety.

Please send written comments to Bureau of Land Management, Rawlins Field Office, Attn: David Simons, 1300 N. 3rd Street, Rawlins, Wyoming 82301. Written comments may also be e-mailed to the attention of David Simons at DesFlats_WYMail@blm.gov. E-mail comments must include the name and mailing address of the commenter to receive consideration. Written comments may also be faxed to (307) 328-4224.

If you have any questions or would like to obtain additional copies of this Final EIS, please contact David Simons at (307) 328-4328 or at the above address.

Sincerely,

Alan L. Kesterke

for Robert A. Bennett
State Director

# FINAL ENVIRONMENTAL IMPACT STATEMENT

# DESOLATION FLATS

# NATURAL GAS FIELD DEVELOPMENT PROJECT

**Prepared for**

**Bureau of Land Management**
**Rawlins Field Office**
**Rawlins, Wyoming**

**and**

**Bureau of Land Management**
**Rock Springs Field Office**
**Rock Springs, Wyoming**

**Prepared by**

**This Environmental Analysis was prepared by *Gary Holsan Environmental Planning*, an environmental consulting firm, with the guidance, participation, and independent evaluation of the Bureau of Land Management (BLM). The BLM, in accordance with Federal regulation 40 CFR 1506.5(a) and (b), is in agreement with the findings of the analysis and approves and takes responsibility for the scope and content of this document.**

**May 2004**

# Desolation Flats
# Natural Gas Development Project

## Carbon County, Wyoming
## Sweetwater County, Wyoming

# ENVIRONMENTAL IMPACT STATEMENT

[ ] Draft **[X] Final**

**Lead Agency:**

U.S. Department of the Interior, Bureau of Land Management

**Cooperating Agencies:**

None

**Counties That Could Be Directly Affected:**

Carbon County, Wyoming
Sweetwater County, Wyoming

**Abstract:**

The Final EIS analyzes a proposal by Marathon Oil Company and other Operators to continue to drill additional development wells in their leased acreage within the Desolation Flats natural gas development area (approximately 233,542 acres) of southcentral Wyoming.

The Desolation Flats project area (DFPA) is located in Carbon County and Sweetwater County, Wyoming. The DFPA is generally located in Townships 13 through 16 North and Ranges 93 through 96 West, 6th Principal Meridian. Access to the DFPA is provided by WYO 789 from Interstate 80 at Creston Junction south to the intersection with Carbon County Road 608. Access to the interior of the project area is provided by an existing road network developed to service prior and on-going drilling and production activities.

The Proposed Action of drilling approximately 385 natural gas wells at 361 well locations, with a forecasted success rate of 65 percent (250 producing wells) was determined by summarizing drilling plans projected by the Desolation Flats Operators over the next twenty-year planning period. Drilling estimations were based on reasonably foreseeable spacing and drilling projections into areas within the project area where the planned production and development activities would occur. The proposed development is in addition to approximately 89 wells that have been drilled and developed in the project area. The proposed development wells, access roads, pipelines, and other ancillary facilities located on public lands would be permitted with the BLM and the Wyoming Oil and Gas Conservation Commission (WOGCC). Facilities located on privately owned surface would be permitted with the appropriate surface owner. The precise

number of additional wells, locations of the wells, and timing of drilling associated with the proposed natural gas development project would be directed by the success of development drilling and production technology, and economic considerations.

This EIS analyzes the impacts of the Proposed Action, alternatives to the Proposed Action, and the No Action Alternative. The EIS describes the physical, biological, cultural, historic, and socioeconomic resources in and surrounding the project area. The focus for impact analysis was based upon resource issues and concerns identified during public scoping.

Potential impacts of concern from development are to recreation and visual impacts; sage grouse breeding and nesting habitat and populations; special status plant and wildlife species; soil erosion and sediment increases within the project area; impacts to air quality; socioeconomic impacts to Carbon and Sweetwater Counties; and cumulative effects.

**Other Environmental Review or Consultation Requirements:**

This EIS, in compliance with Section 7(c) of the Endangered Species Act (as amended), includes the Biological Assessment for the purpose of identifying any endangered or threatened species which are likely to be affected by the proposed action.

**Lead Agency Contact:**

For further information, contact David Simons at the Rawlins Field Office, (307) 328-4328.

Comments on this final EIS should be submitted in writing to :

Bureau of Land Management
David Simons, Project Coordinator
P.O. Box 2407
Rawlins, Wyoming 82301

**Date by which comments must be received by the BLM at the above address: 30 days following publication of the EPA Notice of Availability in the Federal Register.**

**Anticipated date of EPA Notice of Availability published in the Federal Register:**

**May 2004 (Refer to the Wyoming BLM website at www.wy.blm.gov to find the actual closing date of the comment period).**

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# PREFACE

The purpose of this Final environmental impact statement (EIS) for the Desolation Flats Natural Gas Field Development Project is to supplement the Draft EIS which was published in April 2003. Reviewed together, the Draft and Final EIS documents incorporate the description of the proposed project, other alternatives including the "No Action" alternative, the affected environment, as well as the analyses of potential environmental consequences resulting from construction, operation, and abandonment of the proposed project. This Final EIS should not be considered as a complete EIS, nor as a decision document. This FEIS is organized into five sections:

- Section 1, *Executive Summary* - Information presented in this section describes the NEPA process utilized in the analysis, briefly describes the Proposed Action and alternatives, provides a summary of the resource elements analyzed and a summary of their cumulative effects, and describes the agency-preferred alternative.

- Section 2, *Addendum and Errata* - Provides an addendum of additional discussion and studies which have been completed to address comments received during the comment period on the draft EIS. It also includes an errata section showing changes in the text of the Draft EIS which resulted from public comment or internal BLM review.

- Section 3, *Consultation and Coordination* - Summarizes the consultation and coordination that occurred during the preparation of the Desolation Flats Project Area EIS and background information regarding the consultation and coordination process.

- Section 4, *Comment Letters Received on the Draft EIS* - Provides a copy of the comment letters received during the public comment period on the draft EIS.

- Section 5, *Response to Comments* - Provides BLM's responses to those comments shown in Section 4.

- Two appendices not included with the draft EIS are provided in this final EIS. Appendix A contains the Formal and Informal Consultation for the Desolation Flats Natural Gas Project; Appendix B provides direction for cultural resources management within the DFPA.

In response to comments received concerning air quality impacts with implementation of the Desolation Flats Natural Gas Field Development Project and other projects, *Buys and Associates* prepared a Revised Air Quality Impact Assessment Technical Support Document (USDI-BLM 2004b), and the BLM revised the air quality sections of the draft EIS. Changes to the air quality sections are provided in Section 2, Addendum and Errata of this FEIS.

The draft and final EIS documents have been prepared according to the requirements of the National Environmental Policy Act of 1969 (NEPA) and the Council on Environmental Quality's regulations for implementing NEPA, effective July 30, 1979.

The analyses were based on a proposed schedule and maximum assumed level of development contained in the draft EIS. As the project is implemented, the impacts will be evaluated to determine if they fall within the parameters discussed in the draft and final EIS documents. Any major change in project design would require additional environmental analysis.

# ABBREVIATIONS/ACRONYMS

| | |
|---|---|
| AACL | Acceptable Ambient Concentration Levels |
| ac-ft | acre feet |
| ac-ft/mi$^2$/yr | acre feet per square mile per year |
| ac-ft/yr | acre feet per year |
| ACHP | Advisory Council on Historic Preservation |
| Act | Endangered Species Act of 1973 |
| ADT | average daily traffic |
| AML | Abandoned Mine Lands |
| analysis area | Desolation Flats Natural Gas Production Area |
| ANC | Acid Neutralizing Capacity |
| ANS | artificial nesting structure |
| AO | authorized officer |
| APD | Application for Permit to Drill |
| AQRV | Air Quality Related Values |
| AQTR | Air Quality Technical Report |
| AS-WWC | Archaeological Services of Western Wyoming College |
| AUM | Animal Unit Month |
| BA | Biological Assessment |
| BACT | Best Available Control Technology |
| bbl | barrel |
| BLM | Bureau of Land Management |
| BWPD | barrel of water per day |
| CBG | Creston/Blue Gap Natural Gas Project |
| CDPHE-APCD | Colorado Department of Public Health and Environment, Air Pollution Control Division |
| CEQ | Council for Environmental Quality |
| CFR | Code of Federal Regulations |
| cfs | cubic feet per second |
| CIA | cumulative impacts analysis |
| CMP | corrugated metal pipe |
| CO | carbon monoxide |
| COE | Corps of Engineers |
| CWA | Clean Water Act |
| dBA | decibel |
| DEQ | Department of Environmental Quality |
| dia. | diameter |
| EA | environmental assessment |
| EIS | Environmental Impact Statement |
| EO | Executive Order |
| EPA | Environmental Protection Agency |
| ESA | Endangered Species Act of 1973 |
| F | Fahrenheit |
| FAA | USDT Federal Aviation Administration |
| FEMA | Federal Emergency Management Act |
| FLPMA | Federal Land Policy and Management Act |
| FS | Forest Service |
| ft | foot (or feet) |
| FWS | U.S. Fish and Wildlife Service |
| g/hp-hr | grams per horsepower-hour |

# ABBREVIATIONS/ACRONYMS

| | |
|---|---|
| gpm | gallons per minute |
| GPS | Global Positioning System |
| GWA II | Greater Wamsutter Area II |
| HAP | Hazardous Air Pollutants |
| hp | horsepower |
| $H_2S$ | hydrogen sulfide |
| HWA | Hayden-Wing Associates |
| I-80 | Interstate 80 |
| ID | interdisciplinary |
| IDT | interdisciplinary team |
| IMPROVE | Interagency Monitoring of PROtected Visual Environments |
| IWAQM | Interagency Workgroup on Air Quality Modeling |
| km | kilometer |
| LOP | Life of Project |
| m | meter |
| MAC | Metcalf Archaeological Consultants |
| MEI | Maximally Exposed Individual |
| Merit | Merit Energy Company |
| mg/l | milligrams per liter |
| MLE | Most Likely Exposure |
| MMCFD | million cubic feet per day |
| mph | miles per hour |
| MSDS | Material Safety Data Sheet |
| MSHA | Mine Safety Hazard Administration |
| $N_2$ | Nitrogen |
| NA | not applicable |
| n.d. | no date |
| NEPA | National Environmental Policy Act |
| NHPA | National Historic Preservation Act |
| NOAA | National Oceanic and Atmospheric Administration |
| $NO_x$ | oxides of nitrogen |
| $NO_2$ | nitrogen dioxide |
| NPDES | National Pollutant Discharge Elimination System |
| NRHP | National Register of Historic Places |
| NSI | no significant impacts |
| NTU | Nephelometric Turbidity Unit |
| NWI | National Wetlands Inventory |
| OSHA | Occupational Safety and Health Administration |
| P&A'd | plugged and abandoned |
| pH | acidity measurement unit (negative logarithm of the hydrogen ion [$H^+$] concentration) |
| PI | Petroleum Information, Inc. |
| PIC | Planning Information Corporation |
| PM-2.5 | particulate matter less than 2.5 microns in effective diameter |
| PM-10 | particulate matter less than 10 microns in effective diameter |
| POD | Plan of Development |
| PSD | Prevention of Significant Deterioration |
| PPP | pollution prevention plan |
| RCRA | Resource Conservation and Recovery Act |

| | |
|---|---|
| RFFAs | reasonably foreseeable future actions |
| RFO | Rawlins Field Office |
| RMP | Resource Management Plan |
| RMOGA | Rocky Mountain Oil & Gas Association |
| ROD | Record of Decision |
| ROW | Right-of-Way |
| SAR | Sodium Absorption Ratio |
| SARA | Superfund Amendments and Reauthorization Act |
| SBU | South Baggs Unit |
| SCS | Soil Conservation Service |
| SEO | Wyoming State Engineer's Office |
| SHPO | State Historic Preservation Office |
| SI | shut-in |
| $SO_2$ | sulfur dioxide |
| SPCC | Spill Prevention Control and Countermeasures |
| sq. | square |
| t/ac/yr | tons per acre per year |
| t/yr | tons per year |
| TDS | total dissolved solids |
| TPQ | threshold planning quantity |
| TSP | Total Suspended Particulate Matter |
| UAD | unquantified additional development |
| ug/$m^3$ | micrograms per cubic meter |
| UNKI | unknown impact until site-specific location is proposed and surveys are completed |
| USDA | United States Department of Agriculture |
| USDC | United States Department of Commerce |
| USDI | United States Department of the Interior |
| USGS | United States Geological Survey |
| USLE | Unified soil loss equation |
| VOC | Volatile Organic Compounds |
| VRM | Visual Resource Management |
| w/ | with |
| w/i | within |
| w/o | without |
| WDEQ-AQD | Wyoming Department of Environmental Quality, Air Quality Division |
| WESTAR | Western States• Air Resource Council |
| WET | Wetland Evaluation Technique |
| WGFD | Wyoming Game and Fish Department |
| WOGCC | Wyoming Oil and Gas Conservation Commission |
| WOS | Wildlife Observation System |
| WSGS | Wyoming State Geological Survey |
| WTA | Wyoming Taxpayers Association |
| WWC | Western Wyoming College |
| WYNDD | Wyoming Natural Diversity Database |
| WYO 789 | Wyoming Highway 789 |
| Φeq/l | microequivalents per liter |
| Φg/$m^3$ | micrograms per cubic meter |
| EF | degrees Fahrenheit |

# SECTION 1:

# EXECUTIVE SUMMARY

# SECTION 1: EXECUTIVE SUMMARY

## 1.0 INTRODUCTION

This Final Environmental Impact Statement (FEIS) analyzes the impacts of drilling and production operations in the Desolation Flats natural gas producing area of southcentral Wyoming (Figure 1-1). The Desolation Flats project area (DFPA) is located in Carbon and Sweetwater Counties, Wyoming within Townships 13 through 16 North (T13-16N), Ranges 93 through 96 West (R93-96W), 6th Principal Meridian. The project area encompasses approximately 233,542 acres of mixed federal, State, and private lands. Of this total, approximately 224,434 acres are managed by the U.S. Department of the Interior (USDI) Bureau of Land Management (BLM), 2,335 acres are State of Wyoming lands, and 6,773 acres are private lands.

This FEIS has been prepared pursuant to the National Environmental Policy Act (NEPA) and addresses three field development scenarios (Proposed Action, Alternative A, and a "No Action" alternative- Alternative B. Details on the Proposed Action and alternatives are described in the DEIS according to the following chapters. **Chapter 1** defines the Purpose and Need for the proposed project. **Chapter 2** details the parameters of the Proposed Action and other alternatives as well as providing a summary of proposed mitigation and monitoring measures to avoid or reduce impacts proposed by the project operators. **Chapter 3** of the DEIS discusses the areas and resources that would be affected under each alternative. **Chapter 4** examines the environmental consequences to each resource under each alternative and also provides a summary of additional mitigation measures by resource discipline which were identified during the analysis process. The measures and requirements in the DEIS describe how implementation of the Proposed Action or alternatives should be managed to assure minimal impacts in the Desolation Flats project area (DFPA) and adjacent lands. **Chapter 5** describes the mitigation and monitoring measures that should be implemented to assure compliance with resource management goals and objectives provided in the Great Divide Resource Area Resource Management Plan (RMP) (Record of Decision and Approved Resource Management Plan, USDI-BLM 1990a); the Green River RMP and Record of Decision, USDI-BLM 1997), and applicable lease stipulations within the DFPA. **Chapter 6** of the DEIS summarizes the consultation and coordination accomplished with various federal, State, county, and local agencies, elected representatives, environmental and citizen groups, industries, and individuals potentially concerned with issues regarding the proposed drilling action and alternatives.

The DFPA is located within the administrative boundaries of the Rawlins Field Office (RFO) and Rock Springs Field Office (RSFO). Approximately 94 percent of the DFPA is located within the RFO area, with the remaining 6 percent located within the RSFO. The documents that direct management of federal lands within these areas are the RFO Great Divide Resource Management Plan (RMP) and the RSFO Green River RMP. The DFPA natural gas development is in conformance with management objectives provided in the Record of Decision (ROD) and Approved Great Divide and Green River RMPs, subject to implementation of prescribed mitigation measures proposed by the Operators in Chapter 2 of the DEIS and mitigation measures derived through analysis of impacts in Chapter 4, Environmental Consequences.

Drilling attempts within the DFPA have been successful. As of January 1, 2004, 89 producing and shut-in natural gas wells have been drilled in the DFPA.

# SECTION 1: EXECUTIVE SUMMARY

The DEIS addresses a Proposed Action and two alternatives as described in greater detail in the DEIS and briefly summarized here.

## 1.1 PROPOSED ACTION AND ALTERNATIVES

### 1.1.1 Proposed Action

The Desolation Flats Operators have indicated that approximately 385 wells at 361 well locations, with a forecasted success rate of 65 percent (250 producing wells at 235 well locations), may be drilled in the DFPA. This is in addition to 89 wells previously approved in the DFPA.

Development would begin in 2004 (subsequent to the release of the ROD) within the DFPA and continue for approximately 20 years, with a life-of-project (LOP) of 30-50 years. Various associated facilities (e.g., roads, pipelines, power lines, water wells, disposal wells, evaporation ponds, compressor stations, gas processing facility) would also be constructed throughout the DFPA.

The DFPA would have a maximum of: 1,444 acres of new surface disturbance from well locations (including on-site gathering, measurement, and dehydration facilities); 542 miles (2,624 acres) of new roads or upgrades of existing roads, 361 miles (758 acres) of new pipeline and approximately 97 acres of new surface disturbance from ancillary facilities (i.e., 4 compressor stations [16 acres], one gas processing plant [30 acres], 3 water evaporation ponds [12 acres], 2 disposal wells [14 acres], and 10 water wells [ 25 acres]). Total new short-term surface disturbance resulting from the Proposed Action would be 4,923 acres (approximately 2.1 percent of the DFPA).

During the LOP (30-50 years), total disturbances would be reduced to 2,139 acres (336 acres associated with 235 wells having 1.43 acres of remaining disturbance per well site, 1,706 acres of roads [this assumes a 65 percent drilling success rate with roads to unsuccessful wells being reclaimed], and 97 acres of surface disturbance associated with ancillary facilities) or approximately 0.92 percent of the DFPA.

Specific components of the Desolation Flats Natural Gas Development program are discussed in the DEIS, Section 2.5 (Plan of Operations). Additional site-specific proposal and resource information would be contained in the individual well APD and/or ROW applications when submitted to the BLM. Prior to surface disturbance on some drill sites and associated roads, pipelines, and ancillary facilities located on federal surface or federal minerals, additional site-specific analyses may be required.

### 1.1.2 Alternative A

National demand for natural gas is expected to increase during the LOP, as is the likelihood that increased natural gas prices would also occur. With increased realized profits by the oil/gas industry from such demand, the economic realm of new drilling and production technology would also expand. Those areas within the DFPA that are currently considered marginal properties from an economic standpoint by the DFPA Operators may become economically feasible to develop by industry in the future. Should attempts by the Operators to develop marginal properties within the DFPA be successful, then the level of drilling and production activity on marginal properties could potentially increase. In order to analyze for the potential

increases in drilling activity in the DFPA beyond those levels described in the Proposed Action, Alternative A was developed for analysis in this EIS. Alternative A would consist of an increased density of surface well pads and production facilities beyond that described in the Proposed Action to 592 natural gas wells at 555 locations, with a forecasted success rate of 65 percent. This is in addition to 89 wells previously approved in the DFPA. The levels of drilling activity provided in Alternative A were developed by BLM, in consultation with the DFPA Operators, and represent a potential increase in drilling activity that could be realized through further development of marginal properties within the DFPA.

Alternative A would be similar to the Proposed Action in that development would begin in 2004 (subsequent to the release of the ROD) within the DFPA and continue for approximately 20 years, with an LOP of 30-50 years. Various associated facilities (e.g., roads, pipelines, power lines, water wells, disposal wells, evaporation ponds, compressor stations, gas processing facility) would also be constructed throughout the DFPA.

The DFPA would have a maximum of: 2,220 acres of new surface disturbance from well locations (including on-site gathering, measurement, and dehydration facilities); 833 miles (4,035 acres) of new roads or upgrades of existing roads, 555 miles (1,166 acres) of new pipeline, and approximately 161 acres of new surface disturbance from ancillary facilities (i.e., 6 compressor stations [24 acres], 2 gas processing plant [60 acres], 4 water evaporation ponds [16 acres], 3 disposal wells [21 acres], and 16 water wells [ 40 acres]). Total new short-term surface disturbance resulting from Alternative A would be 7,582 acres (approximately 3.2 percent of the DFPA).

During the LOP (30-50 years), total disturbances would be reduced to 3,300 acres (516 acres associated with 361 well locations having 1.43 acres of remaining disturbance per well site, 2,623 acres of roads [this assumes a 65 percent drilling success rate with roads to unsuccessful wells being reclaimed] and 161 acres of surface disturbance associated with ancillary facilities), or approximately 1.4 percent of the DFPA.

The technical requirements for Alternative A are the same as described for the Proposed Action; however, more overall site disturbance requirements would be necessary for the additional well sites, access roads, pipelines, and ancillary facilities.

As with the Proposed Action, additional site-specific proposals and resource information would be contained in the individual well APD and/or ROW applications when submitted to the BLM. The BLM would prepare environmental assessments tiered to the EIS when necessary.

### 1.1.3 Alternative B - No Action

The regulations implementing Section 1502.14(d) of the NEPA require that the alternatives analysis in the EIS "include the alternative of no action" (43 CFR 1502.14 (d). For this project, the No Action Alternative is denial of the drilling and development proposal as submitted by the Operators. However, the Department of the Interior's authority to implement a "No Action" alternative which precludes drilling by denying the project is limited. An explanation of this limitation and the discretion the Department has in this regard is as follows:

An oil and gas lease grants the lessee the "exclusive right and privilege to drill for, mine, extract, remove and dispose of all oil and gas deposits" in the leased lands, subject to the terms and conditions incorporated in the lease (Form 3100-11). Because the Secretary of the Interior has

the authority and responsibility to protect the environment within federal oil and gas leases, restrictions are imposed on the lease terms.

Leases within the DFPA contain various stipulations concerning surface disturbance, surface occupancy, and limited surface use. In addition, the lease stipulations provide that the Department of the Interior may impose "such reasonable conditions, not inconsistent with the purposes for which (the) lease is issued, as the (BLM) may require to protect the surface of the leased lands and the environment." None of the stipulations, however, would empower the Secretary of the Interior to deny all drilling activity because of environmental concerns.

Provisions in leases that expressly provide Secretarial authority to deny or restrict APD development in whole or in part would depend on an opinion provided by the U.S. Fish and Wildlife Service (FWS) regarding impacts to endangered or threatened species or habitats of plants or animals that are listed or proposed for listing. If the FWS concludes that the proposed action and alternatives would likely jeopardize the continued existence of any endangered or threatened plant or animal species, then the APD(s) and Desolation Flats development may be denied in whole or in part.

Authorizations granted in previously approved projects located within the DFPA would remain in effect until a Record of Decision (ROD) is approved for the Desolation Flats project. These projects include the Mulligan Draw natural gas project (Mulligan Draw EIS and ROD, USDI-BLM 1992b), and the Dripping Rock Unit/Cedar Breaks oil and gas field development (Dripping Rock Unit/Cedar Breaks Oil and Gas Field Development EA and DR, USDI-BLM 1985).

Based on the above explanation, this alternative would deny the proposal as submitted but would allow consideration of individual APDs on federal lands on a case-by-case basis through individual project and site-specific environmental analysis. Transport of natural gas products would be allowed from those wells within the project area that are currently productive. Additional gas development could occur on State and private lands within the project area under APDs approved by the WOGCC.

### 1.1.4 Major Impact Conclusions

The following sections summarize impacts to the various resource elements identified during the analysis process for each alternative. Under the No Action Alternative, authorizations granted in previously approved projects located within the DFPA would remain in effect. These projects include the Mulligan Draw natural gas project and the Dripping Rock Unit/Cedar Breaks oil and gas field development. The Mulligan Draw ROD authorized the Mulligan Draw operators to drill and develop a maximum of 45 wells on 640-acre spacing. The Dripping Rock Unit/Cedar Breaks Decision Record (DR) authorized the operators to drill and develop a maximum of 58 wells on 640-acre spacing. Other exploratory and development activities could occur outside these previously approved projects within the DFPA following site-specific analysis.

## 2.0 RESOURCE ELEMENTS ANALYZED

### 2.1 Geology/Minerals/Paleontology

Implementation of the Proposed Action and Alternative A would result in disturbance excavation associated with the development of well pads, access roads, pipelines and other production

facilities which could directly result in the exposure and damage or destruction of scientifically significant fossil resources. The potential magnitude of impact to fossil resources associated with the action alternatives (the Proposed Action and Alternative A) varies proportionally with the total number of wells which would be developed under each alternative. The magnitude of impact for Alternative B - No Action, which may allow additional APDs and ROW action on a case-by-case basis, is unknown at present and would depend on the specific action taken and the specific area involved. Potential for impacts to project facilities as a result of seismic activity is low, as is the potential for landslides and road subsidence that would temporarily close access roads. No significant impacts to important surface resources or other geologic resources would occur under the Proposed Action. Mitigation measures discussed in Chapters 2 and 4 should reduce potential impacts to geologic/paleontologic resources.

Beneficial impacts under the action alternatives include the unanticipated discovery of previously unknown fossil resources within the project area. The potential beneficial impact to fossil resources is not precisely known because field survey of the project area has not been conducted.

### 2.2 Air Quality

As a result of the extended delay in the publication of the DEIS, certain elements of the air quality impact analysis were dated. In response, the DEIS air quality section was revised in order to address the following issues: 1) The ambient air quality standards were revised to reflect the current regulatory status in Wyoming; 2) background criteria pollutant concentrations and visibility conditions were updated; 3) updated significance criteria for hazardous air pollutants were incorporated; 4) an updated mitigation analysis was incorporated; and 5) the cumulative analysis was updated with a qualitative discussion. Based on these revisions, potential air quality impacts were re-analyzed and reported in both the FEIS and a Revised Air Quality Technical Support Document.

These revisions to the DEIS did not substantially alter the results of the air quality analysis. No significant adverse impacts to air quality are anticipated as a result of the implementation of the Proposed Action, Alternative A or the No Action Alternative. Localized increases in criteria pollutants would occur, but maximum concentrations would be below applicable federal and state standards. Similarly, hazardous air pollutant concentrations and incremental increases in cancer risk would also be below applicable significance levels. Potential impacts to visibility and acid neutralizing capacity would be below the levels of acceptable change.

Under Alternative A, 592 wells would be developed with an expected success rate of 65 percent or 385 producing wells. The Proposed Action represents a 35 percent decrease in development when compared to Alternative A, and it is expected that compression requirements for the Proposed Action would also be decreased by a similar percentage. Potential air quality impacts resulting from the implementation of Proposed Action would be proportionally less than the impacts resulting from Alternative A. No significant adverse impacts to air quality are anticipated as a result of the implementation of either the Proposed Action or Alternative A.

Impacts to air quality under the No Action Alternative would occur at allowable levels and no significant impacts are anticipated. Actions approved under the Mulligan Draw EIS and Dripping Rock/Cedar Breaks EA may still be completed within the project area. Completion of the previously approved actions would involve the development of approximately 71 wells, therefore the impacts are expected to be less than Alternative A or the Proposed Action. In the absence

of further development in the DFPA, no additional project related air quality impacts would occur.

### 2.3 Soils

Impacts resulting from drill pad, access road, facility site, and pipeline ROW construction could include removal of vegetation, exposure of the soil, mixing of soil horizons, soil compaction, loss of topsoil productivity, and increased susceptibility of the soil to wind and water erosion.

Construction of the Proposed Action would variously disturb approximately 4,923 acres of soil. This total area of temporary disturbance would comprise approximately 2.1 percent of the 233,542 acre project area. Combined with the existing disturbance of 1,506.4 acres, total disturbance would be approximately 6,429.4 acres or 2.8 percent of the 233,542 acre project area. This total area of temporary disturbance would be reduced through successful reclamation.

During the life of the project (30-50 years), total disturbances would be reduced to 2,139 acres (336 acres associated with 235 wells having 1.4 acres of remaining disturbance per well site, 1,706 acres of roads [this assumes a 65 percent drilling success rate with roads to unsuccessful wells being reclaimed] and 97 acres of surface disturbance associated with ancillary facilities) or approximately 0.92 percent of the 233,542 acre project area.

Well pads would be reclaimed to the 1.4 acre of disturbance/well and remaining disturbed road dimensions would be approximately 16.0 feet wide, or 0.6 acres per well, and 0.0 acres for pipelines. The ancillary facility would not be reclaimed since the full size of the site would be needed during production. These remaining disturbance areas would represent approximately 2,139 acres or 0.92 percent of the total project area. This disturbance would be combined with the existing disturbance of approximately 1,506.4 acres for a total of 3,645.4 acres, or 1.6 percent of the 233,542 acre project area. This long-term disturbance would not preclude achievement of the objectives of the Great Divide and Green River RMP•s and significance criteria described in Chapter 4 for soils.

Construction under Alternative A would variously disturb approximately 7,582 acres of soils. This total area of temporary disturbance would comprise approximately 3.2 percent of the 233,542 acre project area. Combined with the existing disturbance of 1,506.4 acres, total project area disturbance would be approximately 9,088.4 acres or 3.9 percent of the 233,542-acre project area.

During the life of the project (30-50 years), total disturbances would be reduced by reclamation to 3,300 acres or approximately 1.4 percent of the 233,542-acre project area. This disturbance would be combined with the existing disturbance of approximately 1,506.4 acres for a total of 4,806.4 acres, or 2.1 percent of the project area.

Under the No Action Alternative, soils would be impacted as described for the action alternatives as APDs are granted by the BLM pursuant to previous authorizations. Similar erosion, runoff, and sediment control and revegetation measures would be applied to minimize adverse impacts to soils. Such methods would likely reduce impacts of the No Action Alternative to non-significant levels.

### 2.4 Water Resources

Potential impacts due to the proposed project include increased surface water runoff and off-site sedimentation due to soil disturbance; increased salt loading and water quality impairment of surface waters; and channel morphology changes due to road and pipeline crossings. The magnitude of impacts to water resources would depend on the proximity of the disturbance to the drainage channel, slope aspect and gradient, degree and area of soil disturbance, soil character, duration of time within which construction activities would occur, and the timely implementation and success/failure of mitigation measures. Impacts would likely be greatest after the start of construction activities and would likely decrease in time due to natural stabilization, reclamation, and revegetation efforts. Construction activities would likely occur within a 20 year period. Petroleum products and other chemicals could be accidentally spilled resulting in surface and groundwater contamination. Similarly, reserve and evaporative pits could leak and degrade surface and groundwater if liners were punctured or liners were not installed. Authorization of the proposed project would require full compliance with RMP management directives that relate to surface and groundwater protection, Executive Order 11988 (flood plains protection), and the Federal Clean Water Act (CWA) in regard to protection of water quality and compliance with Section 404.

The proposed state-of-the-art drilling and completion techniques make it unlikely that aquifer contamination would occur during drilling. Should aquifer mixing occur, the magnitude of mixing would be relatively small due to the relatively short period of time drilling is conducted. A Spill Prevention, Control, and Countermeasure Plan would be implemented to prevent petroleum products and other chemicals from contaminating groundwater aquifers. If deemed necessary, reserve and evaporative pits would be lined to prevent drilling fluids and produced water from contaminating aquifers.

Authorization of the Proposed Action or Alternative A would require full compliance with RMP management directives that relate to surface and groundwater protection, EO 11990 (Protection of Wetlands), and the CWA in regard to protection of water quality and compliance with Section 404. These regulations require that certain permits/authorizations be obtained for project authorization including an NPDES permit; a surface runoff, erosion, and sedimentation control plan; an oil spill containment and contingency plan; and CWA Section 404 permits. Most of the ephemeral drainage channels within the DFPA are classified as Waters of the U.S. and are often associated with jurisdictional wetlands. Crossings of these channels and associated wetlands would require authorization from the COE through the CWA Section 404 permitting process. Other project facilities such as well sites and/or facilities sites could not be located in Waters of the U.S. and therefore, Section 404 permitting would not be necessary for such facilities. Each individual channel crossing would be reviewed during the APD/ROW permitting process for specific permit requirements under Section 404 of the CWA. No significant impacts would likely result given the assumptions and compliance with management direction identified previously. Most adverse impacts to water resources would be avoided or reduced through implementation of mitigation measures identified in Chapter 2.

Under the No Action Alternative, individual APD•s would continue to be approved by the BLM on a case-by-case basis.

## 2.5 Vegetation/Wetlands

Implementation of the Proposed Action or Alternative A would result in vegetation removal and soil handling associated with the construction and installation of well pads, pipelines, access roads, and other facilities as described in Chapter 2 of the DEIS. Direct impacts would include the short-term loss of vegetation (modification of structure, species composition, and areal extent of cover types). Indirect impacts would include the short-term and long-term increased potential for invasive plant establishment and expansion; exposure of soils to accelerated erosion; shifts in species composition and/or changes in vegetative density; reduction of wildlife habitat; and changes in visual aesthetics.

The duration and magnitude of impacts to vegetation cover types would depend on the locations of well sites and access roads, the success of mitigation and revegetation efforts. In terms of successful site stabilization, necessary time should be on the magnitude of 3-5 years. Revegetation success would depend on the amount and quality of topsoil salvaged, length of time stockpiled, and respread depth over disturbed areas, as well as seed quality and post-seeding weed control efforts.

The likelihood of impact is greatest for the primary vegetation cover types of Wyoming big sagebrush, desert shrub, and basin exposed rock/soil types which occupy 83.8 percent of the project area. Except for habitats occupied by plant species of concern, clearing of upland cover types would not be significant because upland cover types are generally abundant and widely distributed throughout the region and/or have been previously impacted (e.g., disturbed land).

Under the No Action Alternative, vegetation would continue to be impacted as individual APDs are granted by the BLM. Loss of upland cover types would not be significant. If present, impacts to wetlands would be assessed and mitigated on a case-by-case basis similar to the action alternatives. Rare plant surveys would continue to be performed prior to earth-surface disturbance activities associated with individual projects. Invasive plant programs would be implemented per stipulations in individual APDs.

## 2.6 Range Resources and Other Land Uses

Construction of the Proposed Action would temporarily affect 4,923 acres (1,444 acres for well locations and associated facilities, 97 acres for ancillary facilities, 758 acres for pipelines, and 2,624 acres for road ROWs). Assuming that reclaimed areas would be suitable for grazing after five years, a maximum of 2,871 acres would be disturbed at any one time. Once reclamation has been satisfactorily completed on all disturbed areas, the total area of impact would be reduced to approximately 2,139 acres.

Stocking rates for the 12 RFO-administered grazing allotments affected by the Proposed Action and alternatives average 12 acres per AUM. The one affected grazing allotment administered by the RSFO averages 9 acres per AUM. Depending on the actual locations of the drilling and ancillary facilities with respect to forage productivity, lost forage could result in an average annual loss of 158 AUMs (over the 30-50 year LOP) in the RFO portion of the project area (about one-half of one percent of the 31,000 total AUMs in these allotments) and an average annual 12 AUMs in the RSFO portion. The portion of the RSFO-administered allotment (the Rock Springs Allotment) that lies within the DFPA receives little or no use because of terrain and access considerations, so temporary loss of forage in that area would not be likely to impact grazing levels in that allotment. The estimated average annual loss of 12 AUMs would

represent a negligible portion of the 109,442 AUMs permitted for the Rock Springs Allotment.

The increased activity associated with drilling and field development would result in increased opportunities for vehicle/livestock collisions, particularly in the period immediately after lambing and calving season when young animals are active and difficult to see. Given the low traffic volumes associated with field operations, vehicle/livestock collisions are of less concern for the long term. There is also increased potential for damage to livestock control structures and concern for the timely repair of structures to BLM standards. Construction of roads in the project area could allow livestock operators additional access for livestock management operations.

Drilling and construction activities could allow introduction of invasive/non-native species into the DFPA. Invasive/non-native species compete with desirable species, rendering an area less productive as a source of forage for livestock and wildlife.

The area removed from forage production under Alternative A could result in an average annual loss of 248 AUMs (over the 30-50 year LOP) in the RFO portion of the DFPA (about 0.8 of one percent) and 18 AUMs in the RSFO portion. The potential for livestock/vehicle accidents, damage to livestock control structures and spread of invasive/non-native species would increase along with the 55 percent increase in drilling and construction activity associated with Alternative A.

Under Alternative B (No Action), development would proceed on a case-by-case basis. Development within the Mulligan Draw and Dripping Rock Unit/Cedar Breaks area would be authorized not to exceed one well per 640 acres. The amount of forage lost, the potential for livestock/vehicle accidents, damage to livestock control structures and spread of invasive/non-native species would depend on the actual level of drilling and construction activity that would occur under Alternative B.

### 2.7 Wildlife

The implementation of either the Proposed Action or Alternative A would result in direct loss of wildlife habitat from surface disturbance associated with the construction of well sites and related access roads and pipelines. In addition, some wildlife species would be indirectly impacted by temporary displacement from habitats in the vicinity of disturbed areas. The potential for collisions between wildlife and motor vehicles would also increase due to the construction of new roads and increased traffic levels on existing roads. The nature of impacts to wildlife is similar between the Proposed Action and Alternative A. However, the magnitude of potential impacts would be greater under Alternative A, because of the greater number of well sites and increased number of miles of associated access roads and pipelines. These impacts are not expected to be significant under either action alternative and would decrease after completion of construction and successful reclamation. Potential impacts to wildlife under the No Action Alternative would be similar in nature to those under the action alternatives, but at a reduced level. Significant impacts to wildlife species under the action alternatives would be avoided through application of the Wildlife Monitoring/Protection Plan (Appendix H of the DEIS) and all appropriate mitigation measures identified in this document.

The DFPA contains yearlong and crucial winter range for pronghorn, elk, and mule deer. A small percentage of seasonal big game ranges are expected to be impacted directly and big game species may be indirectly impacted through displacement. Direct, indirect, and

cumulative impacts to big game species would be greater under Alternative A than the Proposed Action, but are not expected to be significant under either action alternative. Potential impacts to wild horses are not expected to be significant under any alternative.

Leks and nesting habitat of greater sage-grouse leks are present on the DFPA. Active leks would be avoided, and therefore, would not be disturbed. A small percentage of nesting habitat may be disturbed, but impacts are not expected to be significant. Direct, indirect, and cumulative impacts to greater sage-grouse would be greater under Alternative A than the Proposed Action, but are not expected to be significant under either action alternative.

Raptor nests occur in and adjacent to the DFPA. Activity status of raptor nests located near project related developments would be monitored as development occurs. Significant impacts to raptors are not expected given the application of mitigation measures that would preclude nest abandonment or reproductive failure. Direct, indirect, and cumulative impacts to raptors would be greater under Alternative A than the Proposed Action, but are not expected to be significant under either action alternative.

The application of prescribed avoidance, monitoring (Wildlife Monitoring/Protection Plan, Appendix H) and mitigation measures in this document would reduce the impact potential and allow for either of the action alternatives to be performed without significant impacts to wildlife resources.

### 2.8 Special Status Plant and Wildlife Species

Threatened, endangered, candidate, and proposed plant and wildlife species that may potentially occur on the DFPA include: Ute ladies-tresses, black-footed ferret, bald eagle, and Canada lynx. The Ute ladies-tresses is not expected to occur on the DFPA due to lack of suitable habitat. A small percentage of potential black-footed ferret habitat may be disturbed. The potential for collisions between bald eagles and motor vehicles may increase due to the construction of new roads and increased traffic levels on existing roads. The Canada lynx is not expected to occur on the DFPA due to a lack of suitable habitat. Threatened, endangered, and proposed fish species that occur downstream of the DFPA in the Colorado River System include: Colorado pikeminnow, humpback chub, bonytail, and razorback sucker. None of the threatened, endangered, and proposed wildlife and fish species are expected to be adversely effected under either action alternative.

A total of 35 BLM State of Wyoming sensitive wildlife and fish species may occur on the DFPA. State of Wyoming sensitive species, as defined by the BLM, are those that could become endangered or go extinct within the State. A small percentage of potential habitat for several sensitive wildlife species may be disturbed. However, none of the sensitive wildlife and fish species are expected to be significantly impacted under either action alternative.

The application of prescribed avoidance, monitoring (Wildlife Monitoring/Protection Plan, Appendix H of the DEIS) and mitigation measures in this document would reduce the impact potential and allow for either of the action alternatives to be performed without significant impacts to special status wildlife species.

## 2.9 Recreation

Well drilling, testing and production operations, and associated site preparation and construction activities cause alterations to the recreation setting and recreation opportunities available to persons using the area. Some recreationists could be temporarily or permanently displaced from certain locations associated with drilling and production activities. Displacement of recreationists could also result from changes in the numbers or distribution patterns of wildlife that attract hunters and wildlife observers to the area. The presence of construction and drilling equipment and associated increase in industrial activities in the area could reduce opportunities for recreationists seeking to experience solitude and isolation from human activity. Such changes could also result in displacement or redistribution of recreationists who would choose to avoid such conditions, as well as result in reduced satisfaction among others who might continue to engage in recreation activities in the area.

There would be no significant adverse impact to recreation resources if recommended mitigation measures are employed with the exception of that part of the project area located inside the Monument Valley Management Area (MVMA). However, some users would be temporarily or permanently displaced and for some that continue to recreate in the area, the experience would be diminished. Several generations of recreationists could be affected.

MVMA and WSA

The MVMA is located within the checker board land pattern within the project area. Drilling and possible production activities in the 14 square miles of BLM administered lands in the DFPA inside the MVMA would have significant adverse impacts to the future recreation potential of those 14 sections; impacts would include surface disturbance, changes to general landscape character and visual resources. Future generations of recreationists would be denied the possibility of experiencing isolation and solitude afforded by those 14 sections as part of a potential future special management area.

Also, drilling within the MVMA and along the 21 mile long common boundary between the DFPA and the Adobe Town WSA could preclude quality recreation opportunities for those seeking solitude and isolation within the northern and western portion of the adjacent Adobe Town WSA until all wells have been abandoned and fully reclaimed. Attempts to mitigate by screening and distancing the project components from the edge of the WSA would not completely eliminate the influence of oil and gas development on the WSA. This is considered a significant impact.

## 2.10 Visual Resources

Both short-term and long-term impacts to the visual resources would occur where patterns of area, line, form, color, and texture in the characteristic landscape would be contrasted by drilling equipment, production facilities, and/or construction related damage to vegetation, topography or other visible features. The severity of impact depends upon scenic quality, sensitivity level, and distance zone of the affected environment, reclamation potential of the landscape disturbed, and the level of disturbance to the visual resource created by the Proposed Action.

Adverse impacts from well construction would occur within the short term due to contrast in line, form, color and textures associated with equipment, surface disturbance, and fugitive dust juxtaposed with the existing landscape. Long-term impacts would result from production facilities, access roads, and fugitive dust.

With the exception of the 23 square miles of project area inside the MVMA (14 square miles of BLM administered lands), there would be no significant adverse impact to visual resources if recommended mitigation measures are employed. However, some users would be temporarily or permanently displaced and for some that continue to recreate in the area, the visual experience would be diminished because of noise, dust and a general degradation of visual quality.

MVMA and WSA

Drilling in the MVMA could preclude high visual quality recreation opportunities for those seeking solitude and isolation within the northern and western portion of the DFPA and adjacent Adobe Town WSA until all wells have been abandoned and fully reclaimed. Several generations of recreationists could be affected. This is considered a significant adverse impact.

### 2.11 Cultural Resources

Potential impacts to specific eligible or unevaluated properties are unknown at this time. In general, the DFPA has a moderate to high site density, and therefore, high archaeological sensitivity. Certain geomorphic situations have a greater archaeological potential than other areas especially in terms of significant cultural resources. These situations include eolian deposits (sand dunes, sand shadows and sand sheets) and alluvial deposits along major drainages.

Although the DFPA has a high degree of archaeological sensitivity, impacts to known cultural properties would not be significant with implementation of the Proposed Action or alternatives. Potential impacts to known and anticipated cultural resources can be alleviated through appropriate mitigation measures. If cultural resources on, or eligible to, the National Register are to be adversely impacted by the proposed development, then the applicant, in consultation with the surface managing agency and the SHPO, shall develop a mitigation plan. Construction would not proceed until terms of the mitigation plan are satisfied.

### 2.12 Socioeconomics

Economic effects of the drilling and field development phase of the Proposed Action would include an estimated $840 million in direct expenditures to the Operators, which would generate an estimated total of $1.145 billion in total economic impact (including $154 million in earnings) in southwestern Wyoming over the 20-year field development period. The operations phase of the Proposed Action would generate $2.977 billion in total economic impact including $218.4 million in earnings over the 30 to 50 year life of the project. This positive economic impact would be offset slightly by reductions in grazing activity. Under the estimates and assumptions used for this assessment, these reductions would total $442,000 including $80,000 in earnings over the life of the project. It is possible that the Proposed Action would result in reductions in economic activity associated with hunting and other recreation activities in the DFPA, although the increased access afforded by development of roads may attract some new hunters and recreation visitors. Displaced hunters and recreationists may relocate to other areas within southwest Wyoming, although opportunities for solitude and isolation are becoming increasingly limited within the region.

The Proposed Action would result in an estimated 246 drilling and field development annual job equivalents (direct and indirect) and 156 production-related annual job equivalents in southwest

Wyoming. Some of these jobs would be filled by existing residents, however, an estimated peak in-migrant population of 442 workers is anticipated for the year 2021. This population would be disbursed throughout southwest Wyoming but likely concentrated in Rock Springs and, to a lesser extent, Rawlins. These communities could accommodate anticipated population growth with existing housing resources and infrastructure, but small communities closer to the DFPA (Wamsutter and Baggs) would need to develop housing and improve some infrastructure before being able to absorb substantial additional population. Wamsutter and Baggs would receive minimal tax revenues from the Proposed Action and would be required to seek other sources of funding to develop infrastructure to accommodate growth.

The Proposed Action would generate an estimated $123 million in property tax revenues for Sweetwater County over the life of the project and $15.5 million in Carbon County. The Proposed Action would also generate an estimated $5.3 million in sales and use tax revenue for the State of Wyoming, $3.4 million for Sweetwater County and $471,000 for Carbon County. Proposed Action-related Mineral Severance Tax revenues to the State of Wyoming would total an estimated $119 million, and Wyoming's share of Federal Mineral Royalties would total an estimated $283 million.

Community acceptance of the Proposed Action would be mixed. Some residents, particularly those with direct and indirect interests in oil and gas development, would likely be supportive. Those who believe that recreation resources, wildlife habitat and relatively undisturbed landscapes in the project area would be negatively impacted would be dissatisfied with implementation of the Proposed Action.

The economic, employment, population and fiscal effects of Alternative A would be about 54 percent greater than those associated with the Proposed Action. Under current conditions, the communities of Rock Springs and Rawlins could accommodate this growth with existing resources. If new housing were to be developed in the communities of Wamsutter and Baggs and a substantial number of Project employees were to relocate to these communities, existing infrastructure could be strained under Alternative A.

Community acceptance would likely remain mixed under Alternative A, but an increased number of residents might believe that recreation, wildlife habitat and undisturbed landscapes would be negatively impacted by the increased level of development.

Economic, employment, population and fiscal effects of Alternative B (No Action) would be dependent on the level of drilling and field development which actually occurs in the Mulligan Draw and Dripping Rock Unit/Cedar Breaks area coupled with that approved by the BLM on a case-by-case basis, and by the WOGCC on private and State-owned lands. Similarly, community acceptance of the No Action Alternative would remain mixed and dependent on the level of development actually approved. Those that support oil and gas development would likely be dissatisfied with the foregone economic opportunities associated with the Proposed Action and Alternative A. Hunters and recreationists who use the Project Area would experience less dissatisfaction with loss of isolation, solitude and undisturbed landscapes under Alternative B, unless development occurs in areas that are routinely used by these groups.

### 2.13 Transportation

Access to the project area is provided by I-80, Wyoming State Highway 789 (WYO 789), Colorado Highway 13 (CO 13) Sweetwater County Road 23/Carbon County Road 701 (SCR

23/CCR 701), also known as the Wamsutter/Dad Road, and Carbon County Road 700 (CCR700).

Transportation effects of natural gas development and production would include increased traffic on federal and state highways and county roads providing access to the DFPA, including the above mentioned highways and roads. There would also be a statistical increase in the potential for accidents on these roads. Given the small increase in traffic associated with the development relative to existing traffic on these highways and roads, transportation impacts are not anticipated to be significant under any of the three alternatives considered in this EIS.

### 2.14 Health and Safety

Potential risks associated with the proposed action include the normal risks associated with traffic, construction activities, and drilling and production operations. In most instances, exposure to these hazards would be limited to the project-related workforce. Implementation of environmental protection and mitigation measures described in Chapters 2 and 4 would minimize the risk of exposure to these hazards. $H_2S$ is not present within the DFPA, and therefore, is not a safety concern for this area.

The Proposed Action and alternatives would not result in any substantial, increased risks to public health and safety; nor would they introduce any unusual occupational hazards or threats to the health and safety of oil and gas field workers. A Hazardous Material Management Plan has been prepared by the Operators and is appended to the DEIS (Appendix D).

### 2.15 Noise

Noise associated with drilling, field development and production could potentially affect human comfort and safety (at extreme levels) and modify animal behavior. Noise levels in excess of the 55 dBA maximum standards can occur during construction and maintenance of well sites, access roads, ancillary facilities such as compressor sites and pipelines. However, perception of sound varies with intensity and pitch of the source, air density, humidity, wind direction, screening/focusing by topography or vegetation, and distance to the observer. Under typical conditions, excess levels decline below the level of significance (55 dBA) at 3,500 feet from the source. Drilling and field development-related noise impacts would be short-term, occurring on an intermittent basis at different locations throughout the DFPA throughout the estimated 20-year drilling and field development cycle. Substantially lower and less frequent noise disturbances would occur throughout the productive life of the field.

Construction-related impacts would be short-term, lasting as long as construction activities were ongoing at well sites, access roads, pipelines, and other ancillary facilities such as compressor sites. Noise would be created over a longer term at the individual well sites as a result of drilling activities.

Overall, noise produced by drilling and field development operations would be moderate because of the dispersed and short-term nature of these activities. Given the remoteness and isolation of the DFPA, drilling, field development and production operations would not affect noise sensitive locations for humans. Other users of the DFPA would be affected infrequently for periods of short duration as they move through the area. Affects on noise sensitive locations for animals would be avoided by implementation of the preconstruction planning and design measures described in Chapter 2 of the DEIS.

## 3.0 SCOPE OF ANALYSIS

The purpose of the scoping process, as stipulated (40 CFR, Parts 1500-1508), is to identify important issues, concerns, and potential impacts that require analysis in the EIS and to eliminate insignificant issues and alternatives from detailed analysis. Public participation, consultation, and coordination have occurred throughout the planning process for this EIS through *Federal Register* notices, press releases, scoping meetings, individual contacts, and informal consultation. Contact dates and actions taken by BLM are summarized in Chapter 6 - Consultation and Coordination of the DEIS. All information received during the scoping process is available for review at the Rawlins and Rock Springs Field Offices.

Also, during preparation of the DEIS, the BLM and consultant Interdisciplinary Team (IDT) have communicated with, and received input from various federal, state, county, and local agencies, elected representatives, environmental and citizen groups, industries, and individuals potentially concerned with issues regarding the proposed drilling action.

## 4.0 SUMMARY OF CUMULATIVE EFFECTS

The Proposed Action and alternatives have the potential to create cumulative impacts when combined with past, present and reasonably foreseeable future activities (RFFAs). The cumulative impact analysis (CIA) conducted for this EIS applies to the Proposed Action and Alternative A.

Chapter 5 of the DEIS identifies potential cumulative impacts for each of the resources assessed in this document.

The CIA assumes compliance with all applicable federal, state and local regulations and permit requirements, compliance with the Great Divide and Green River RMPs, and successful implementation of the mitigation measures identified in Chapters 2 and 4 of the DEIS.

Potential cumulative impacts are assessed at the resource level for four CIA areas: (1) within the Desolation Flats project area, (2) within the watersheds that contain the DFPA, (3) within southeastern Sweetwater County and southwestern Carbon County area, and (4) within the southwestern Wyoming and northeastern Colorado region.

Past and present activities and RFFAs within the DFPA include livestock grazing; dispersed recreation; and oil and gas exploration, development, production and product transportation. Total disturbance (after reclamation) within the DFPA would comprise an estimated 1.6 percent of total land area within the Project Area for the Proposed Action and 2.1 percent for Alternative A.

Past and present activities within the Barrel Springs Draw and Sand Creek drainage basins, the two basins that contain the DFPA, also include livestock grazing; dispersed recreation; and oil and gas exploration, development, production and product transportation. Utility, communication and transportation corridors also traverse these basins, and portions of the Creston/Blue Gap, Continental Divide/Greater Wamsutter II and South Baggs natural gas project areas are contained in the basins. Cumulative post-reclamation disturbance is projected to equal 0.89 percent of total land area within the two basins. Significant cumulative impacts are not anticipated for any resource within the Barrel Springs or Sand Creek basins.

Cumulative socioeconomic effects were assessed for Sweetwater and Carbon counties and the communities near the Project Area. The current potential for cumulative socioeconomic impacts in these counties is associated with the Proposed Action and alternatives coupled with ongoing and proposed natural gas drilling and field development (including coalbed methane development). Assuming that natural gas development levels will continue to be cyclic (i.e., periods of accelerated development followed by periods of moderate development levels), potential cumulative impacts on area socioeconomic conditions would include substantially positive effects on local economic conditions, increased employment opportunities, and increased federal, state and local tax revenues. Potential negative effects include increased demand on housing resources and community services in Wamsutter and Baggs from in-migrating employees and families associated with drilling and field development projects. The communities of Rock Springs and Rawlins could accommodate cumulative natural gas development at historic levels with existing housing and infrastructure, but Wamsutter and Baggs would need to add housing resources and some infrastructure to accommodate any increase in demand over current levels. Neither Wamsutter nor Baggs would receive significant tax revenues from natural gas development or production; these communities would need to obtain funding from other sources to finance infrastructure improvements required to accommodate growth.

Community attitudes toward cumulative natural gas development are likely to be positive for those community members who benefit directly or indirectly from the associated economic activity, but less positive or negative for those whose activities (grazing, hunting, dispersed recreation) or values (undisturbed landscapes and opportunities for solitude and isolation) would be affected by cumulative natural gas development.

Recent national and world events suggest the possibility that the future pace of development of natural gas resources in southwest Wyoming could exceed historic cyclic levels. Dramatic and sustained increases in natural gas demand and prices brought about by world events, changes in national energy policy or sustained high levels of economic growth could result in corresponding dramatic increases in the pace of development in Sweetwater and Carbon counties.

Given the number of wells authorized in the two counties, dramatic increases in the pace of development could result in socioeconomic impacts substantially larger than those identified above. It is conceivable that population increases associated with accelerated development could exceed housing resources and community facility and service capacity even in larger communities such as Rock Springs and Rawlins. In the case of such an extreme scenario, negative community impacts could be avoided or mitigated by the development and implementation of a coordinated industry/local government impact plan.

Cumulative impacts to recreation and visual resources would occur within southeastern Sweetwater County and southwestern Carbon County. Activities associated with the Proposed Action and alternatives would add to the substantial level of impact to visual and recreation resources already existing in the area. Although natural gas projects occur in different viewsheds, the composite experience for those traveling through the area, particularly on back roads, is one of a highly modified landscape. Contrasts in line, form, color and texture begin to dominate the viewer's experience. Views of large, relatively undisturbed patches of the characteristic Wyoming Red Desert landscape are becoming less common. These conditions would increase the likelihood that viewers, particularly back country recreationists, would be dissatisfied with the visual component of their recreation experience.

The substantial level of natural gas development and activity in the area also limits the ability of hunters and non-consumptive recreationists to adapt to changing patterns of wildlife use of the landscape, find more pristine environments, and relocate their activities in nearby areas. Disturbance in 23 square miles of the existing MVMA, an important area for recreationists seeking solitude and isolation, would substantially reduce relocation options. These conditions increase the probability that hunters and other recreationists would be displaced, dissatisfied, or have a less enjoyable recreation experience. It is important to note that development could occur in the privately held portions of this area regardless of the approval of the Proposed Action.

The cumulative impact analysis predicts that the maximum criteria pollutant concentrations will not exceed federal or state ambient air quality standards. In addition, cumulative criteria pollutant impacts are predicted to be less than the PSD Class I increments. Potential impacts to sensitive lake ANC are less than the applicable limits of acceptable change. Visibility impacts of up to 25 days exceeding the 0.5 delta-deciview (dv) threshold and 7 days exceeding 1.0 dv threshold are predicted as a result of cumulative emissions (0.5 dv and 1.0 dv. are the two criteria utilized for reporting visibility impacts). However, the presence or absence of the Desolation Flats Project (Alternative A) does not significantly alter the predicted cumulative visibility impacts. On only two of the 0.5 dv impact days would the absence of Desolation Flats change the visibility impacts to levels below 0.5 dv. None of the days with greater 1.0 Ödv would be changed to less than 1.0 Ödv with the absence of the Desolation Flats project. Of the two days that Desolation Flats would contribute to 0.5 Ödv impacts, one occurs at Dinosaur National Monument while the second occurs at Rawah Wilderness, both located in Colorado.

## 5.0 AGENCY-PREFERRED ALTERNATIVE

The Proposed Action is the BLM's Preferred Alternative for the Desolation Flats Natural Gas Development Project. The selection of the Proposed Action incorporates compliance with the Great Divide RMP, Green River RMP and implementation of various mitigation measures. Such measures include the following: (1) proponent-committed and BLM required project-wide measures for preconstruction planning and design and specific resources, (2) BLM Standard Mitigation Guidelines (DEIS - Appendix A), (3) Reclamation Plan (DEIS - Appendix C), (4) Hazardous Materials Management Plan (DEIS - Appendix D), (5) Wildlife Monitoring/Protection Plan (DEIS - Appendix H), and (5) additional mitigation measures recommended in Chapter 4 of the DEIS (Mitigation Summary of each resource element). The BLM has concluded that these detail a complete listing of practicable measures to reduce environmental harm resulting from the development and management in the DFPA. The BLM also feels that the analyses demonstrate that the Proposed Action would meet the requirements of Federal Regulation 43 CFR 3162(a), which directs the Operators to conduct "....all operations in a manner which ensures the proper handling, measurement, disposition, and site security of leasehold production; which protects other natural resources and environmental quality; which protects life and property; and which results in maximum ultimate economic recovery of oil and gas with minimum waste and with minimum adverse effect on ultimate recovery of other mineral resources." Disclosure of the Proposed Action as the Agency-Preferred Alternative does not imply that this will be the BLM's final decision. Additional information acquired during the FEIS public comment period, and public and BLM internal review comments, may result in the selection of an alternative in the ROD that combines components of the Proposed Action and the other alternatives to provide the best mix of operational requirements and mitigation measures needed to reduce environmental harm.

# SECTION 2:

# ADDENDUM AND ERRATA

# SECTION 2: ADDENDUM AND ERRATA

## 2.1 INTRODUCTION

The following sections have been prepared in response to public and agency review comments on the DEIS. The Addendum Section is to provide changes in the analysis described in the DEIS. Since there were no additions to the analysis provided in the DEIS, there will not be an Addendum Section. The Errata Section, Section 2.2 describes changes to the DEIS in response to public comments.

## 2.2 ERRATA

### EXECUTIVE SUMMARY

### 2.4 Water Resources

Page S-7, Delete sentence starting with "However," in the 1st paragraph.

### TABLE OF CONTENTS

Page ii, change "2.5.2.11 Project-Wide Mitigation Measures" to "2.5.2.11 Standard Operating Procedures and Applicant-Committed Measures."

### CHAPTER 1: PURPOSE AND NEED

#### 1.4.1.3 Conformance with Great Divide RMP Direction

Page 1-12, replace the text starting at the top of page 1-12 through the beginning of Section 1.4.2 on page 1-14 with the following text:

For the RFO portion of Desolation Flats, a review of the WOGCC database on January 21, 2004 showed a total of 3,046 wells on state, federal and privately held surface in the RFO that are active (this includes dormant wells [44], completed wells [2,723], notices of intent to abandon [71], and spuds [208] within the RFO). The number of spuds are those wells where APDs are approved and notice has been received that drilling has been initiated, but there is no report yet of the wells being completed or plugged and abandoned. The total count of 3,046 wells goes back to the beginning of oil and gas production within the RFO in 1911. From the Great Divide RMP EIS (Assumptions for Analysis, Chapter 4, page 220) the number of wells existing at the time the RMP DEIS (USDI-BLM 1987) was 3,671 wells drilled in the planning area on all ownerships, and of these, 1,896 wells were dry and abandoned. That left 1,775 wells (3,671 minus 1,896) active prior to the RMP. Subtracting this figure from the 3,046 wells currently in the RFO according to the WOGCC (Table 1-4) leaves 1,271 active producing wells since the RMP EIS.

# SECTION 2: ADDENDUM AND ERRATA

In Table 1-4, "plugged and abandoned" (P&A) wells are well pads that were drilled and at some point abandoned. To enter into P&A status, the wells must be plugged, abandoned, reclaimed and subsequently inspected and accepted as reclaimed by the BLM. Wells in the status of "notice of intent to abandon" (NOIA) fit into two categories, either plugged, abandoned, and awaiting reclamation or plugged, abandoned, reclaimed and awaiting acceptance by the BLM. For the purposes of this analysis, no NOIA wells are considered reclaimed.

**Table 1-4 Well Status Summary – Rawlins Field Office (RFO) as of 01/21/04.**

| Well Description (number of wells within RFO) | Federal | Fee or State | Total |
|---|---|---|---|
| Plugged and Abandoned | 1,337 | 1,599 | 2,936 |
| Dormant | 22 | 22 | 44* |
| Completed | 1,317 | 1,406 | 2,723* |
| Monitoring | 0 | 0 | 0 |
| Notice of Intent to Abandon | 24 | 47 | 71* |
| Number of Spuds | 108 | 100 | 208* |
| Number of Expired Permits | 620 | 375 | 995 |
| Number of Permits to Drill | 378 | 219 | 597 |
| Waiting on Approval | 0 | 0 | 0 |
| Totals | 3,812 | 3,768 | 7,580 |

* = Counts towards # wells

Analysis of 26 wells drilled under the Desolation Flats interim drilling program as of January, 2004 shows that long-term disturbance has averaged 6.3 acres/well. This includes well pads and roads. This is the most current figure available, and comes from actual experience from the DFPA. This figure contrasts with the simple average of 2.8 acres of long-term disturbance from the 4 natural gas projects listed in Table 1-5.

The coal bed natural gas disturbance figures were not used because they would skew the average figure above toward a smaller value. This is due in part to the smaller reclaimed well pad size for coal bed natural gas wells, and in this case, for the Brown Cow Pod, the fact that the wells would be developed on existing well pads and existing roads from an earlier project. For the purposes of this analysis, the 6.3 acre figure was increased to 6.5 acres/well long-term disturbance. This is a conservative estimate due to future wells within the DFPA benefiting from roads already established by the current wells and is consistent with the BLM's intent not to underestimate disturbance acreages.

To convert the current number of wells (1,271) to current acres disturbed long-term, the well number was multiplied by 6.5 acres disturbed per well. 1,271 wells x 6.5 acres per well = 8,262 acres of long term disturbance to date within the Rawlins Field Office under the Great Divide RMP.

Currently there are 8 oil and gas project development environmental analyses in the RFO where drilling and production activities are authorized but not yet completed. These wells and associated disturbances need to be considered before a determination of the number of wells remaining under the RFD scenario described in the RMP can be made. See Table 1-5 for a summary of the oil and gas development projects with wells authorized but not yet drilled outside of the Desolation Flats Project area.

Table 1-5 shows that approximately 956 wells and 2,505 acres of disturbance remain to be completed under existing authorizations for these projects. The well count for wells remaining to be drilled was taken from the WOGCC on-line database.

**Table 1-5. Long Term Disturbance Figures for Existing Oil and Gas Development NEPA Documents.**

| | Wells* remaining to drill 12/31/2001 | Wells* drilled since 01/01/02 | Authorized Wells Remaining | ***Average Disturbance per Well (Acres) | Authorized Disturbance Remaining (Acres) |
|---|---|---|---|---|---|
| Sierra Madre | 16 | 0 | 16 | 1.95 | 31 |
| Hay Reservoir | 2 | 2 | 0 | 4.43 | 0 |
| Continental Divide / Wamsutter II | 1031 | 282 | 749 | 2.77 | 2,075 |
| South Baggs | 40 | 2 | 38 | 2.03 | 77 |
| Creston/Blue Gap | 207 | 66 | 141 | 2.23 | 314 |
| Atlantic Rim (Brown Cow Pod)** | 12 | 37 | 12 | 0.63 | 8 |
| Totals | 1,308 | 389 | 956 | NM | 2,505 |

*: dormant, completed, notice of intent to abandon, and wells spud combined
**: additional Pods have been approved since the DEIS analysis
***: estimate from environmental analysis document

The total disturbance then for existing and authorized (but not yet drilled) wells is 2,505 acres plus 8,262 acres = 10,767 acres of long-term disturbance either existing or authorized. Reasonably foreseeable development for oil and gas activity within the RFO administrative area as described in the Great Divide RMP (BLM 1988a) was projected to include 1440 new wells (16,092 acres of long term disturbance) over a 20-year period (1986-2005). As stated above, 10,767 acres of disturbance are either existing or authorized within the RFO. Long-term disturbance acreage available for future, as yet unauthorized, within the RFO area would be 5,325 acres (16,092 minus 10,767).

The well pad number proposed for each alternative are detailed below. Wells that are drilled but not successful would be short term disturbance that would be completely reclaimed following plugging and abandonment. Successful wells will have short term disturbance during construction and drilling, and long term disturbance over a smaller area during the operational phase of their life.

**Table 1-6 Projected Well Pads by Alternative.**

| Alternative | # Wells Proposed | 65 % Successful # Wells | Wells in RFO (13 in RSFO) |
|---|---|---|---|
| Proposed Action | 385 | 250 | 237 |
| Alternative A | 592 | 385 | 373 |

**Table 1-7 Summary of Long Term Disturbance Proposed for Desolation Flats Project Area by Alternative.**

| Alternative | Acres / Well | # wells* projected | Acres Disturbance Proposed | Existing and Authorized Disturbance within RFO | Total Long Term Disturbance |
|---|---|---|---|---|---|
| Proposed Action | 6.5 | 237 | 1,541 | 10,767 | 12,308 |
| Alternative A | | 373 | 2,425 | | 13,192 |

*reflects projected 65% success rate, per Table 1-6 above

The DFPA natural gas development Proposed Action and Alternative A are in conformance with management objectives provided for in the ROD and Approved Great Divide RMP (USDI-BLM 1990a), subject to implementation of prescribed mitigation measures proposed by the Operators and BLM required mitigation in Chapter 2, and mitigation measures derived through analysis of impacts in Chapter 4, Environmental Consequences.

Page 1-20, rename "Table 1-6" to "Table 1-8." Add the following to this table after the "Water Quality Division" entry:

| **WYOMING DEPARTMENT OF ENVIRONMENTAL QUALITY** | |
|---|---|
| Air Quality Division | New Source Review (NSR) Permit: All pollution emission sources, including compressor engines and portable diesel and gas generators. |

## CHAPTER 2: PROPOSED ACTION AND ALTERNATIVES

### 2.0 Summary

Page 2-1, change the first sentence to read: "The DFPA currently contains 89 active producing wells, with accompanying production…." In the second sentence, change "63" to read "89."

### 2.5.2.11 Project-Wide Mitigation Measures

Page 2-32, rename "Project-Wide Mitigation Measures" to "Standard Operating Procedures and Applicant-Committed Measures."

# SECTION 2: ADDENDUM AND ERRATA

## CHAPTER 3: AFFECTED ENVIRONMENT

### 3.2 CLIMATE AND AIR QUALITY

Page 3-11, Replace entire Section 3.2 in DEIS with the following text:

#### 3.2.1 Climate

The climatic conditions for the DFPA are classified as a semiarid mid-continental regime. The climate is typified by dry, windy conditions with limited precipitation and long cold winters. The nearest meteorological measurements were recorded at Baggs, Wyoming for the dates September 1979 through July 2000. The Baggs meteorological station is located approximately 14 miles east of the project area at an elevation of 6,239 feet. Due to the wide variation in elevation and topography within the project area, site specific climatic conditions may vary considerably from the conditions recorded at the Baggs station.

The recorded temperatures at the Baggs station are typically cool, with average daily temperatures ranging between 7EF and 34EF in midwinter and 45EF to 83EF during midsummer. Extreme temperatures have ranged from -50EF (January 14, 1984) to 100EF (August 18, 1984).

The annual average total precipitation is slightly greater than 11 inches. Over 68% of the average annual precipitation occurs between May and October. The annual average snowfall totals 40.5 inches, with December and January being the snowiest months at 9.6 and 8.4 inches respectively. Table 3-5 presents the average temperature range, average total precipitation and average total snowfall by month, while figures 3-2 through 3-4 show the average climatic conditions graphically.

The project area is subject to strong gusty winds, often accompanied by snow during the winter months, producing blizzard conditions and drifting snow. The nearest comprehensive wind data were collected at the Rawlins, Wyoming airport, approximately 60 miles from the project area. However, hourly wind data for the period December 1994 through November 1995 were collected near Baggs, Wyoming as part of the Mount Zirkel Wilderness Area Visibility Study. The close proximity of the Baggs station to the project area suggests that these data, rather than the more distant Rawlins data, best represents the wind conditions occurring within the project area. Figure 3-5 presents a wind rose generated from the Baggs data for the period December 1, 1994 through November 30, 1995. The wind rose depicts the relative directional frequency of the winds and the speed class. As indicated, the winds are predominately from the south to southwest approximately 37 percent of the time. The annual mean wind speed is 10.4 miles per hour (4.64 meters/second). Note that the meteorological data set used to generate the wind rose was processed with calm wind measurements set to a speed of one meter per hour. Therefore, the wind rose shows essentially no calms.

The direction and strength of the wind directly affects the dispersion and transport of pollutants emitted to the atmosphere. The strong winds typically present within the project area enhance the potential for the mixing and transport of the pollutants. Table 3-6 presents the wind speed frequency distribution while Table 3-7 summarizes the wind direction frequency.

The Proposed Action and alternatives are not expected to have any measurable adverse effect on the local or regional climate. Therefore, climate is not further discussed in this document.

**Table 3-5. Mean Monthly Temperature Range, Total Precipitation and Snowfall**.

| Month | Average Temperature Range (Fahrenheit) | Average Total Precipitation (inches) | Average Total Snowfall (inches) |
|---|---|---|---|
| January | 5.1 - 32.9 | 0.49 | 8.4 |
| February | 8.6 - 36.6 | 0.45 | 5.7 |
| March | 19.9 - 47.3 | 0.44 | 5.2 |
| April | 27.4 - 58.3 | 0.88 | 2.5 |
| May | 34.2 - 67.7 | 1.64 | 0.2 |
| June | 41.2 - 79.0 | 0.98 | 0.0 |
| July | 47.6 - 85.6 | 1.46 | 0.0 |
| August | 46.1 - 83.7 | 0.97 | 0.0 |
| September | 37.7 - 74.2 | 1.15 | 0.0 |
| October | 26.8 - 61.0 | 1.46 | 2.0 |
| November | 16.6 - 43.5 | 0.71 | 6.9 |
| December | 6.5 - 33.8 | 0.55 | 9.6 |
| Annual Average | 26.5 - 58.6 | 11.19 | 40.5 |

**Table 3-6. Wind Speed Frequency Distribution.**

| Wind Speed (miles per hour) | Percentage of Occurrence |
|---|---|
| 0.0 to 4.0 | 6.6 |
| 4.0 to 7.5 | 33.2 |
| 7.5 to 12.1 | 29.6 |
| 12.1 to 19.0 | 21.8 |
| 19.0 to 24.7 | 5.8 |
| Greater than 24.7 | 3.1 |

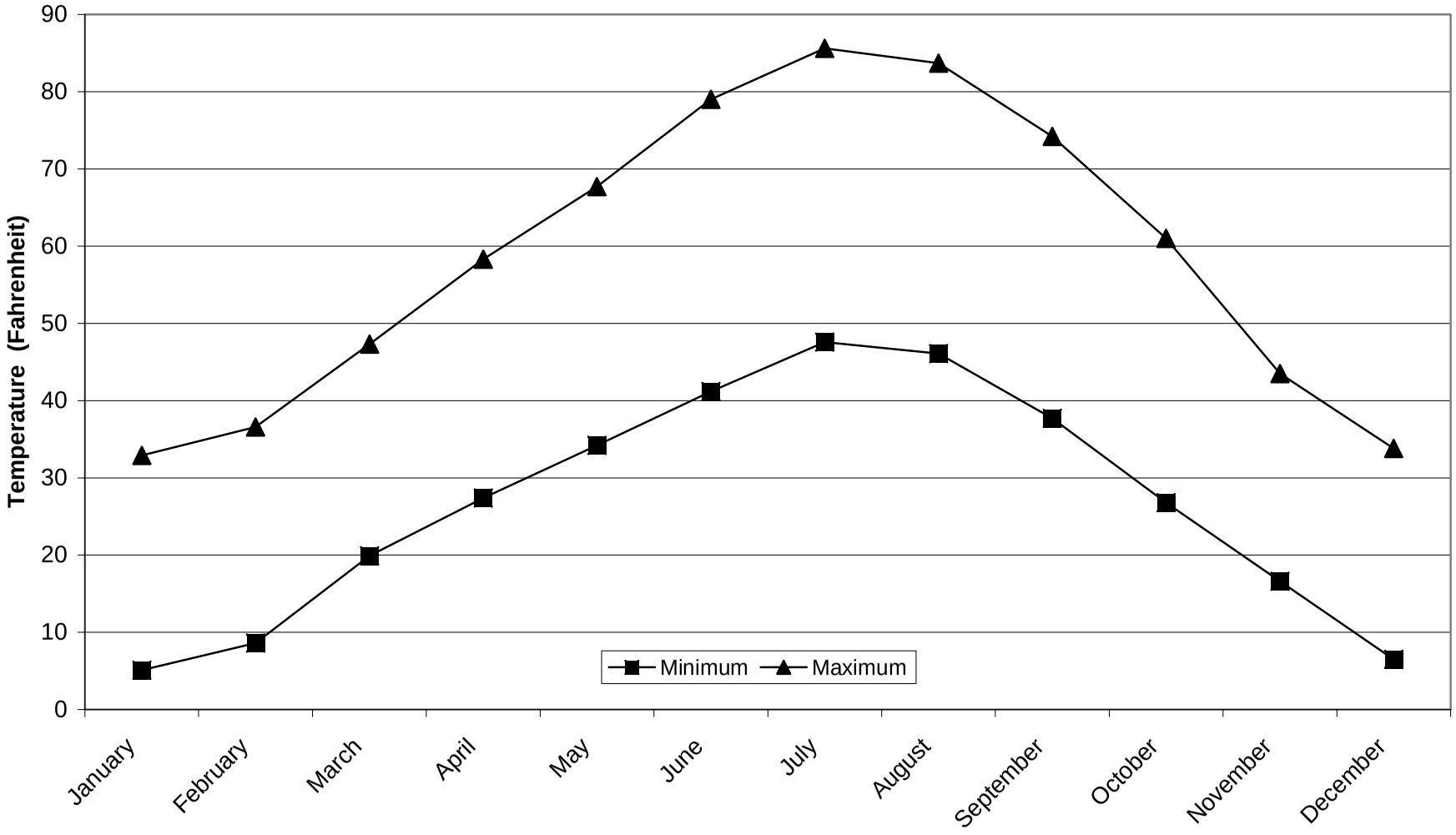



**Figure 3-2 Monthly Average Temperatures at Baggs, Wyoming (1979 - 2000)**

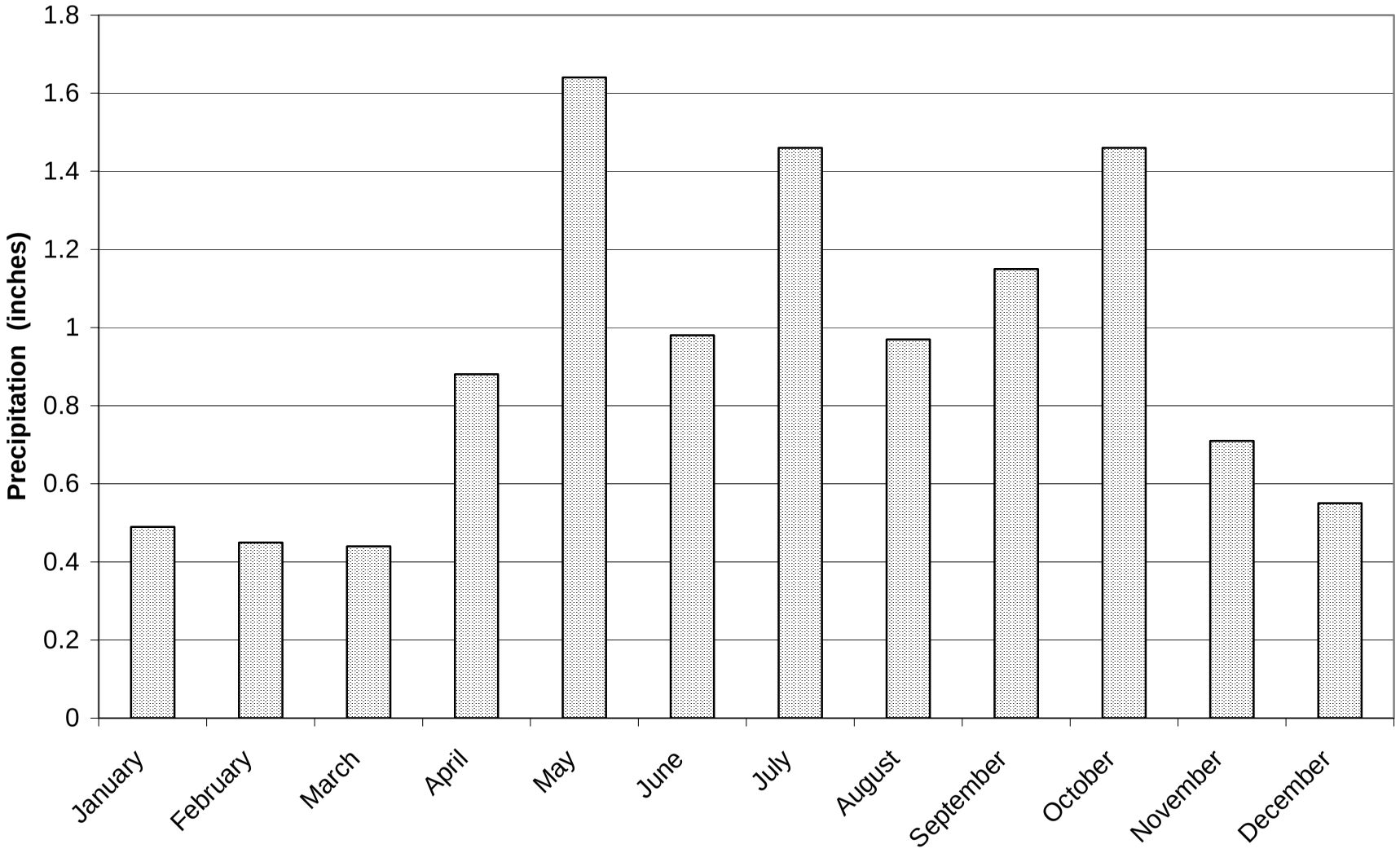



**Figure 3-3 Monthly Average Precipitation at Baggs, Wyoming (1979 - 2000)**

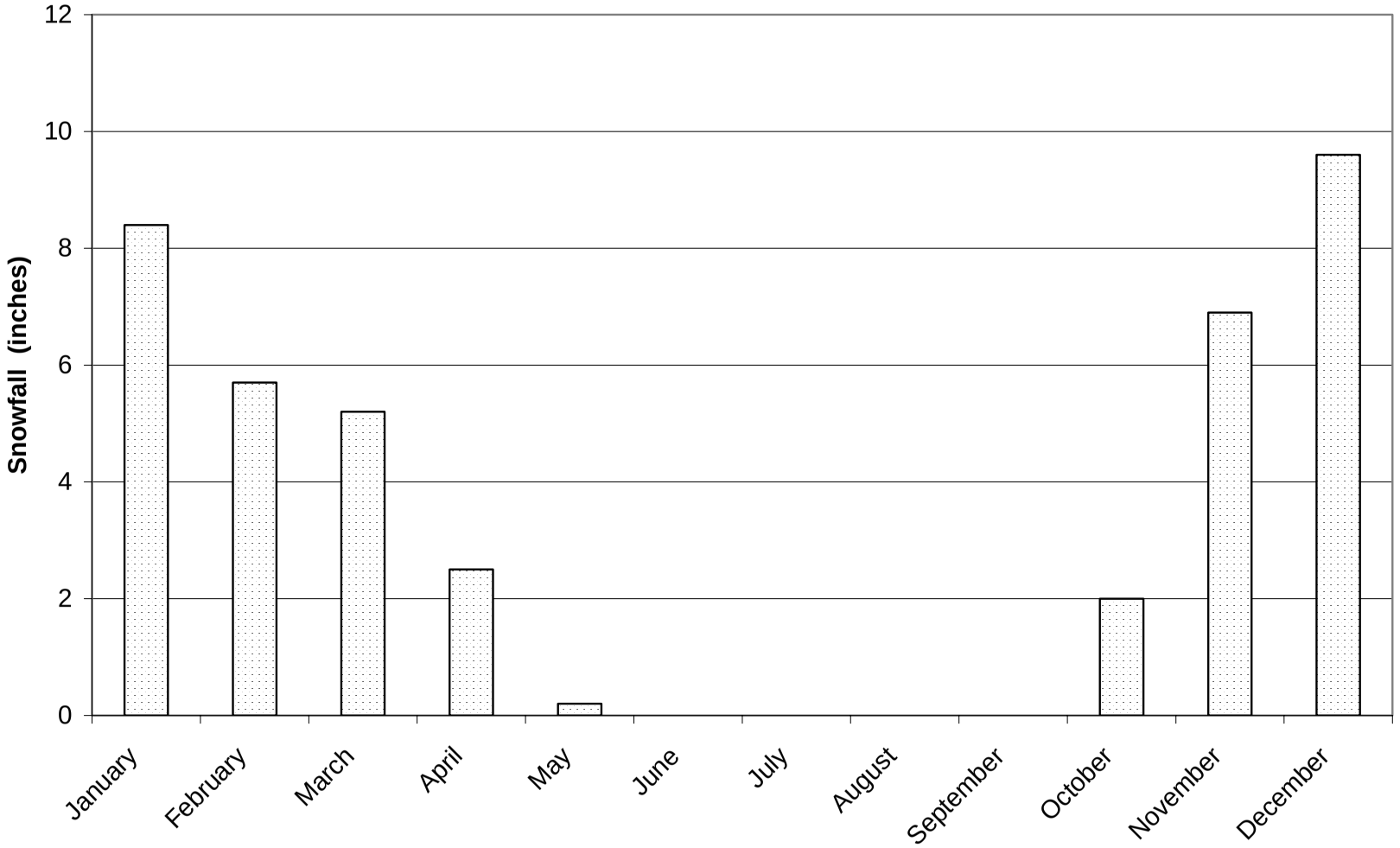



**Figure 3-4 Mean Monthly Average Snowfall at Baggs, Wyoming (1979 - 2000)**

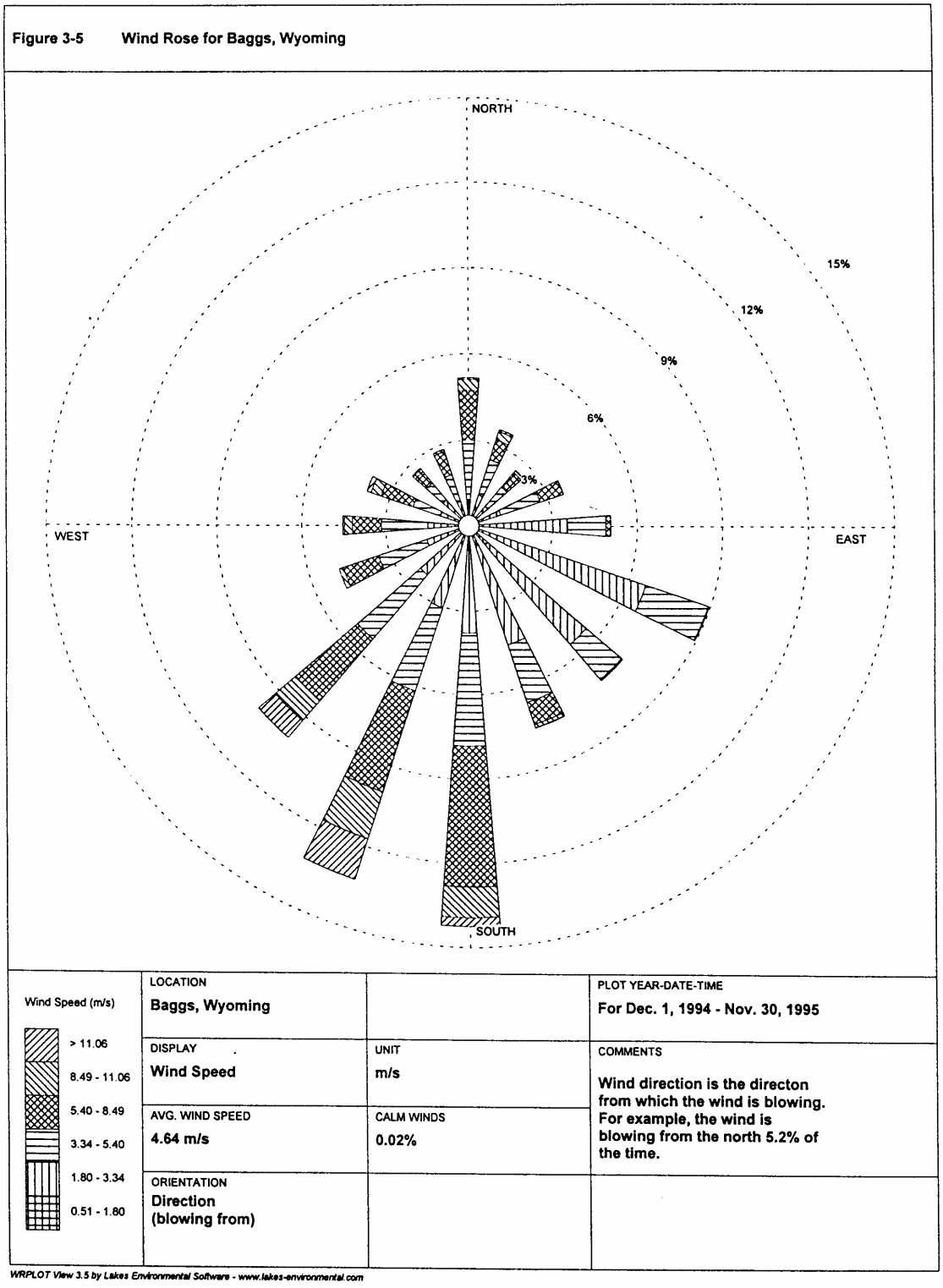



**Figure 3-5. Baggs, Wyoming Wind Rose for December 1, 1994 to November 30, 1995.**

**Table 3-7. Wind Direction Frequency**.

| Direction From Which Wind Is Blowing | Percentage of Occurrence |
|---|---|
| North | 5.2 |
| North Northeast | 3.6 |
| Northeast | 2.6 |
| East Northeast | 3.6 |
| East | 5.0 |
| East Southeast | 9.0 |
| Southeast | 7.2 |
| South Southeast | 7.5 |
| South | 14.2 |
| South Southwest | 13.2 |
| Southwest | 10.0 |
| West Southwest | 4.9 |
| West | 4.5 |
| West Northwest | 3.9 |
| Northwest | 2.7 |
| North Northwest | 2.8 |

### 3.2.2 Air Quality

National and state ambient air quality standards set acceptable limits for criteria air pollutant concentrations. Although specific air quality monitoring has not been conducted within the project area, criteria pollutant background concentrations measured in the region are in attainment with the National, Wyoming and Colorado ambient air quality standards, indicating that the local air quality is good. Table 3-8 presents the measured background concentrations and the ambient air quality standards.

Incremental increases in the ambient concentration of criteria pollutants are regulated under the Prevention of Significant Deterioration (PSD) program. The project and the majority of the surrounding region are classified as PSD Class II. However, five PSD Class I areas identified as sensitive receptors were analyzed for this study: Bridger Wilderness, Fitzpatrick Wilderness, Savage Run Wilderness, Mount Zirkel Wilderness, and Rawah Wilderness. In addition, three PSD Class II sensitive receptor areas were analyzed: Wind River Roadless Area, Popo Agie Wilderness Area and Dinosaur National Monument. Several PSD Class I areas were not considered in the analysis due to their great distance from the project area. The excluded areas include Yellowstone, Grand Teton, and Rocky Mountain National Parks, Washakie Wilderness, Teton Wilderness and North Absaroka Wilderness. As shown in Table 3-8, the limitations on the incremental increases in pollutant concentrations are very restrictive for PSD Class I areas as compared to Class II areas. Figure 3-6 presents a map of the air quality study area and indicates the location of the DFPA and the identified sensitive PSD Class I and Class II areas.

# SECTION 2: ADDENDUM AND ERRATA

It should be noted that any comparisons made to the PSD Class I and II increments for this analysis are intended to evaluate an "impact threshold" and do not represent a regulatory PSD increment consumption analysis. The determination of PSD increment consumption is a state air quality regulatory agency responsibility with oversight from the Environmental Protection Agency (EPA). A PSD increment consumption analysis is part of the major New Source Review process and may also be performed by a state regulatory agency or EPA in order to determine minor source increment consumption.

In addition to ambient air quality standards and PSD increments, Air Quality Related Values (AQRVs), which include the potential air pollution effects on visibility and the acidification of surface water bodies, is a concern for the sensitive PSD Class I and Class II receptors. Visibility is often referred to in terms of atmospheric light extinction or visual range, the furthest distance a person can see a landscape feature. Visibility also involves how well scenic landscapes can be seen and appreciated. When visibility is impaired by air pollution, people perceive a loss of color, contrast and detail.

Visibility impairment is frequently expressed in terms of deciview (dv). The deciview index was developed as a linear perceived visual change. A change in visibility of 1.0 dv represents a "just noticeable change" by the average person under most circumstances. Increasing deciview values represent proportionately larger perceived visibility impairments. The Forest Service (FS) has identified specific "Level of Acceptable Change" (LAC) values which they use to evaluate potential air quality impacts within their wilderness areas (USDA-FS 1993). For visibility impacts, the FS utilizes a LAC of 0.5 deciview, or "one-half of a just noticeable change."

Continuous visibility related background data collected as part of the Interagency Monitoring of PROtected Visual Environments (IMPROVE) program are available for two sensitive receptors within the study area: Bridger Wilderness and Mt. Zirkel. The Bridger data best represent existing conditions at the Bridger, Fitzpatrick, and Popo Agie wilderness areas and the Wind River Roadless Area, while the Mt. Zirkel data best represent existing conditions for Dinosaur National Monument and the Mt. Zirkel, Savage Run, and Rawah wilderness areas.

Five year rolling averages of the 20% cleanest, 20% haziest and the mid-range 40% to 60% visibility conditions (reconstructed from aerosol measurements) as monitored at Bridger Wilderness and Mount Zirkel Wilderness (IMPROVE 2003) are presented in Figures 3-7 and 3-8. As shown, monitored visibility conditions at Bridger and Mount Zirkel Wilderness Areas have been stable, neither improving nor degrading over the monitoring period.

Table 3-9 summarizes the seasonal 20% best visibility conditions as reconstructed from aerosol measurements recorded at Bridger and Mount Zirkel Wilderness areas. The standard visual ranges for the two areas are charted in figure 3.9. As shown, visibility conditions for the areas are very good, with the best conditions (greatest SVR) occurring at Bridger Wilderness. The best visibility conditions typically occur during the fall and winter months when aerosol concentrations are at a minimum.

For assessing visual impacts, background conditions consistent with the 1995 emission inventory date were utilized. Details concerning these data are presented in the Near- and Far-Field Ambient Air Quality Technical Report (BLM 2004).

**Table 3-8. Background Concentrations and Ambient Air Quality Standards (:g/m$^3$).**

| Pollutant and Averaging Time | Measured Background Concentration | Wyoming Ambient Air Quality Standards | Colorado Ambient Air Quality Standards | National Ambient Air Quality Standards | PSD Class I Increment | PSD Class II Increment |
|---|---|---|---|---|---|---|
| **Carbon Monoxide (CO)** | | | | | | |
| CO 1-hr | 2,299 [a] | 40,000 | 40,000 | 40,000 | None | None |
| CO 8-hr | 1,148 [a] | 10,000 | 10,000 | 10,000 | None | None |
| **Nitrogen Dioxide ($NO_2$)** | | | | | | |
| $NO_2$ Annual | 3.4 [b] | 100 | 100 | 100 | 2.5 | 25 |
| **Ozone ($O_3$)** | | | | | | |
| $O_3$ 1-hr | 169 [c] | 235 | 235 | 235 | None | None |
| $O_3$ 8-hr * | 147 [c] | 157 | 157 | 157 | None | None |
| **Particulate Matter less than 10 microns ($PM_{10}$)** | | | | | | |
| $PM_{10}$ 24-hr | 47 [d] | 150 | 150 | 150 | 8 | 30 |
| $PM_{10}$ Annual | 16 [d] | 50 | 50 | 50 | 4 | 17 |
| **Particulate Matter less than 2.5 microns ($PM_{2.5}$)** | | | | | | |
| $PM_{2.5}$ 24-hr * | 15 [d] | None | None | 65 | None | None |
| $PM_{2.5}$ Annual* | 5 [d] | None | None | 15 | None | None |
| **Sulfur Dioxide ($SO_2$)** | | | | | | |
| $SO_2$ 3-hr | 29 [e] | 1,300 | 700 | 1,300 | 25 | 512 |
| $SO_2$ 24-hr | 18 [e] | 260 | 365 | 365 | 5 | 91 |
| $SO_2$ Annual | 5 [e] | 60 | 80 | 80 | 2 | 20 |

**Note:** ***** Effective February 27, 2001 the U.S. Supreme Court upheld the EPA's position on the proposed national 8-hr ozone and PM2.5 standards. The WDEQ-AQD will not enforce these standards until EPA issues an implementation rule. Therefore no demonstration of compliance with these standards is required at this time.

**Sources:**

a. CDPHE, 1996 - Data collected at Rifle and Mack, Colorado in conjunction with proposed oil shale development during early 1980s.
b. ARS, 2002 - Data collected at Green River Basin Visibility Study site, Green River, WY during the period January - December 2001.
c. WDEQ-AQD - Data collected at Green River Basin Visibility Study site, Green River, Wyoming during the period June 10, 1998 through December 31, 2001.
d. WDEQ-AQD, 2002 - Data collected by WDEQ at Emerson Building, Cheyenne, WY, Year 2002.
e. CDPHE-APCD, 1996 - Data collected at the Craig Power Plant site and at Colorado Oil Shale areas from 1980 to 1984.

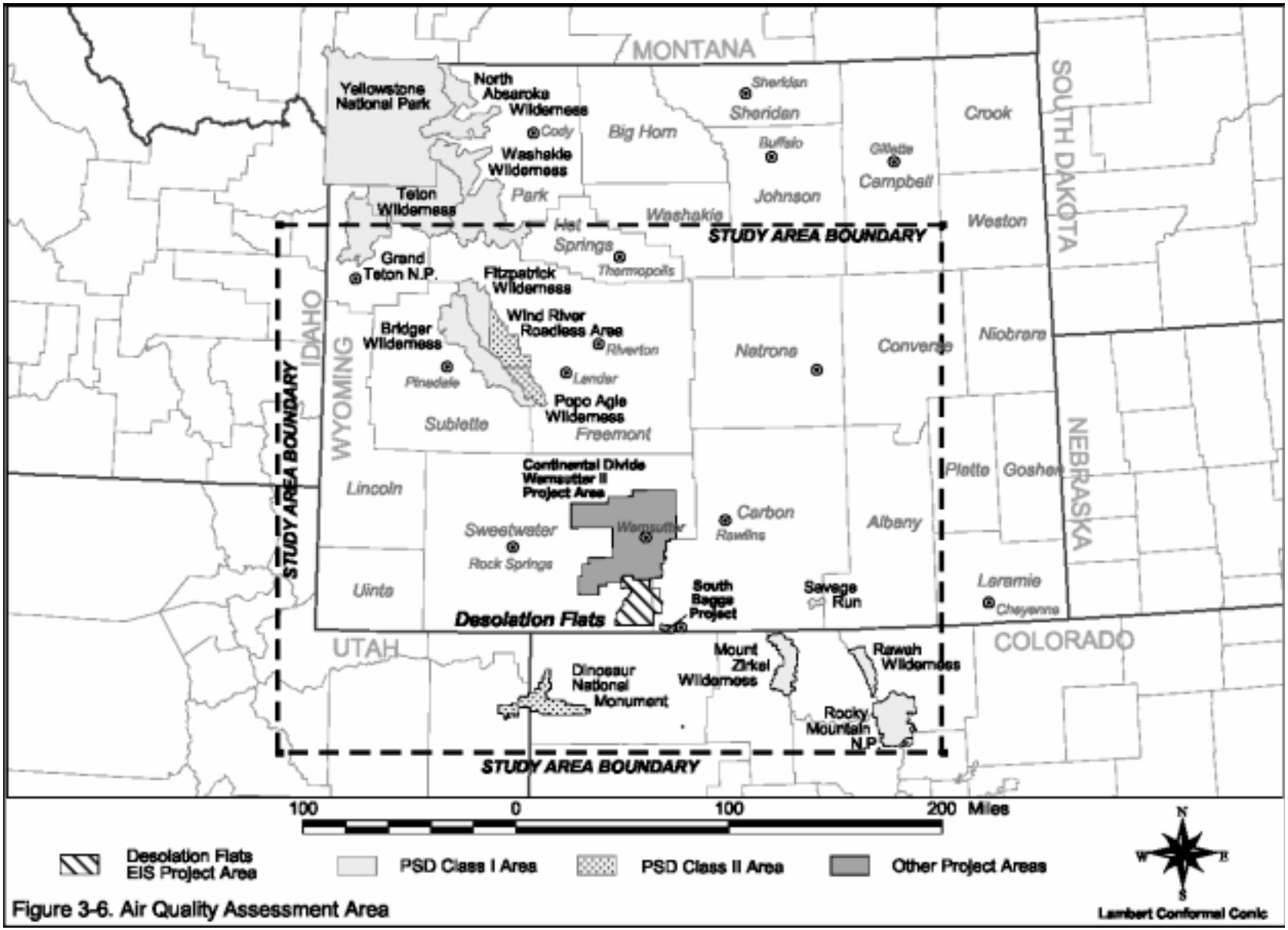


Figure 3-6. Air Quality Assessment Area

**Table 3-9. Bridger Wilderness and Mount Zirkel Wilderness 20% Best Visibility Conditions**.

| Wilderness Area | Month | Standard Visual Range (kilometers) | Deciview (Unitless) |
|---|---|---|---|
| Bridger Wilderness | January | 284 | 3.2 |
| | February | 287 | 3.1 |
| | March | 287 | 3.1 |
| | April | 224 | 5.6 |
| | May | 224 | 5.6 |
| | June | 231 | 5.3 |
| | July | 211 | 6.1 |
| | August | 211 | 6.1 |
| | September | 205 | 6.5 |
| | October | 282 | 3.3 |
| | November | 273 | 3.6 |
| | December | 275 | 3.5 |
| Mount Zirkel Wilderness | January | 254 | 4.3 |
| | February | 254 | 4.3 |
| | March | 258 | 4.1 |
| | April | 212 | 6.1 |
| | May | 210 | 6.2 |
| | June | 217 | 5.9 |
| | July | 204 | 6.5 |
| | August | 199 | 6.7 |
| | September | 197 | 6.9 |
| | October | 278 | 3.4 |
| | November | 274 | 3.6 |
| | December | 274 | 3.6 |

Note: Standard Visual Range and Deciview values were reconstructed utilizing quarterly aerosol concentrations representative of the 20% best visibility conditions in conjunction with monthly f(Rh) values as published in appendix A-2 of Guidance for Estimating Natural Visibility Conditions Under the Regional Haze Rule. Aerosol concentrations provided by Scot Copeland, USFS, October 2003. Bridger Wilderness aerosol concentrations based upon monitored conditions for the period 1988 through 2002. Mount Zirkel concentrations based upon monitored conditions for the period 1995 through 2002.

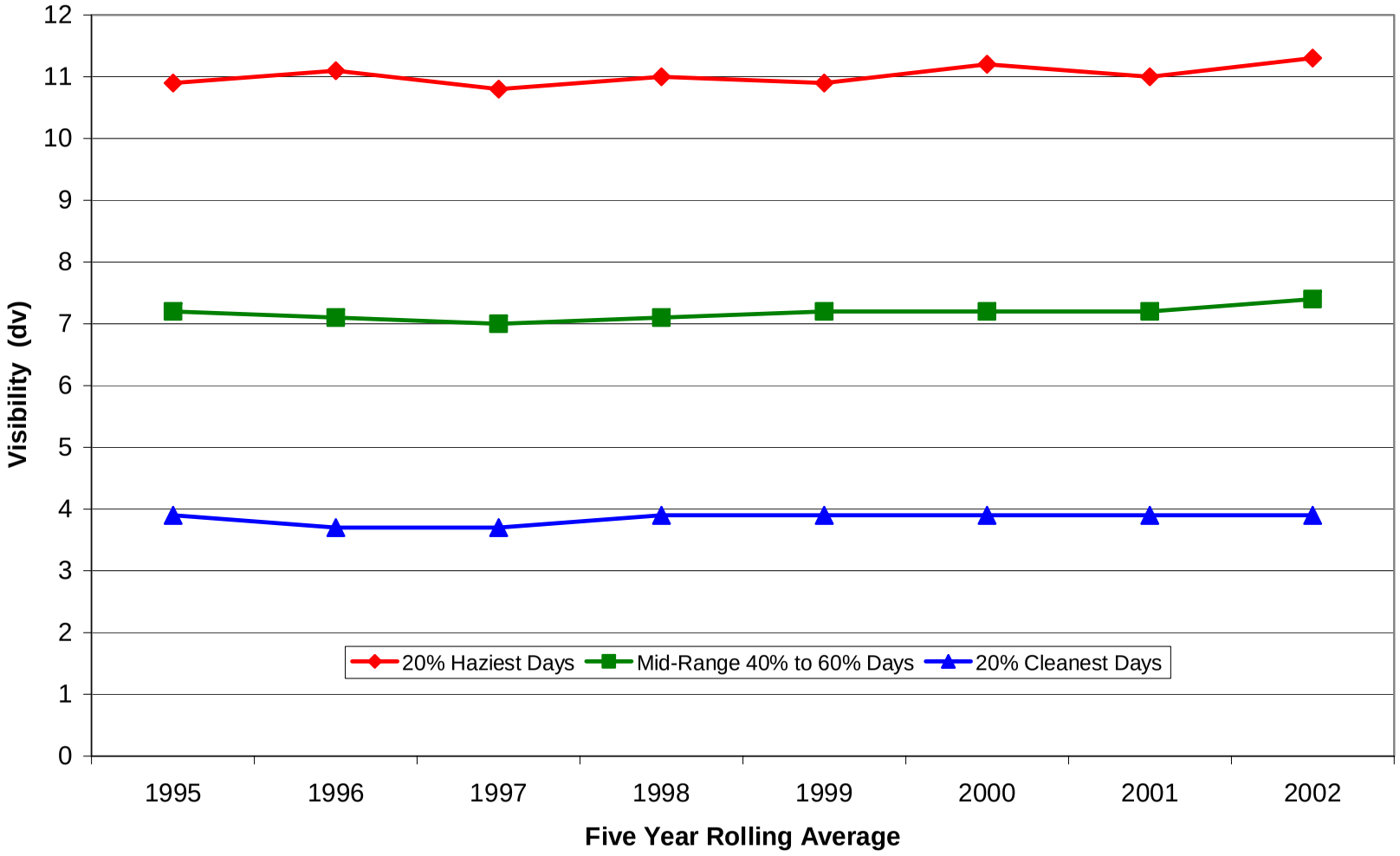



**Figure 3-7. 5 Year Average Visibility Conditions At Bridger Wilderness.**

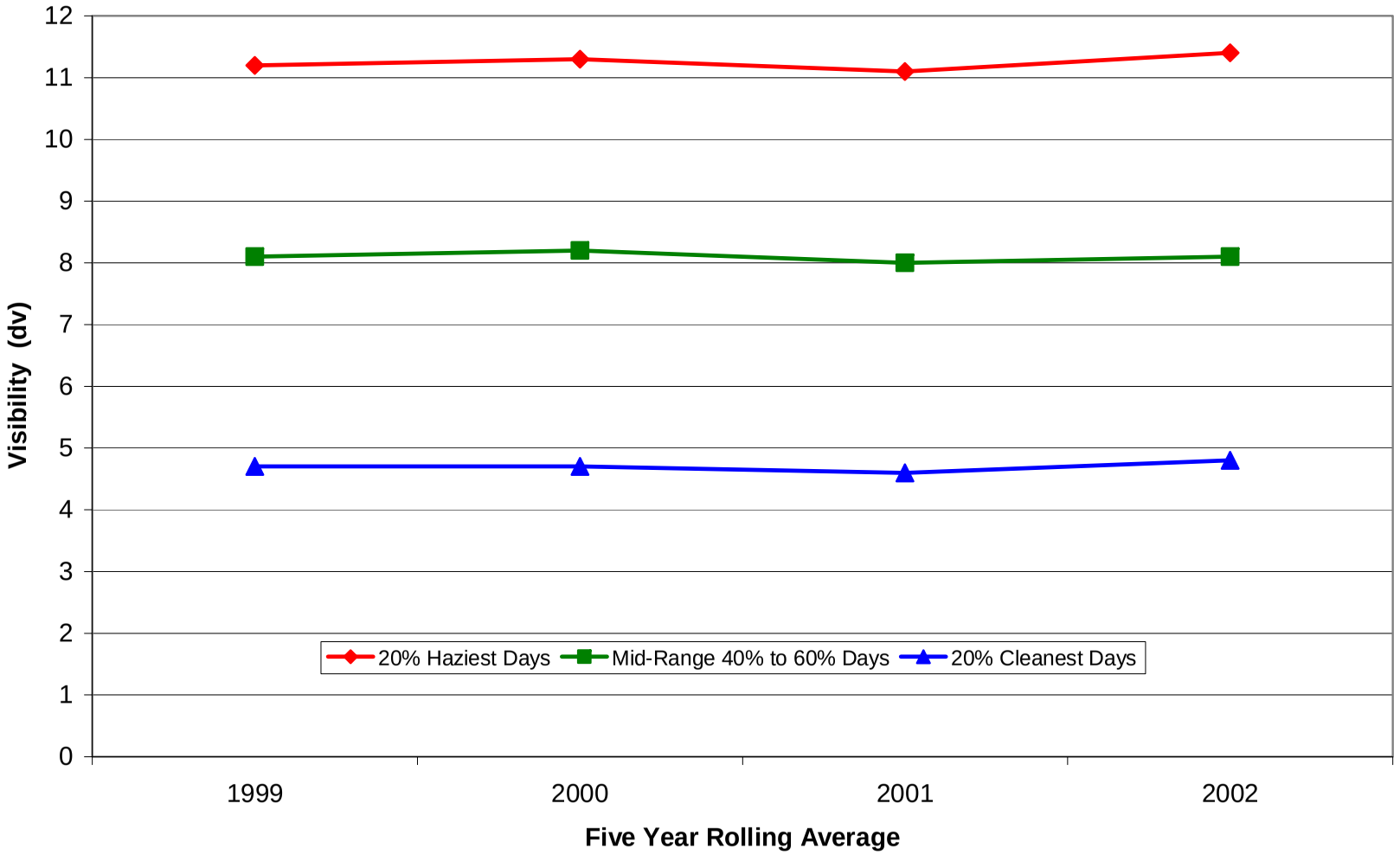



**Figure 3-8. 5 Year Average Visibility Conditions At Mount Zirkel Wilderness.**

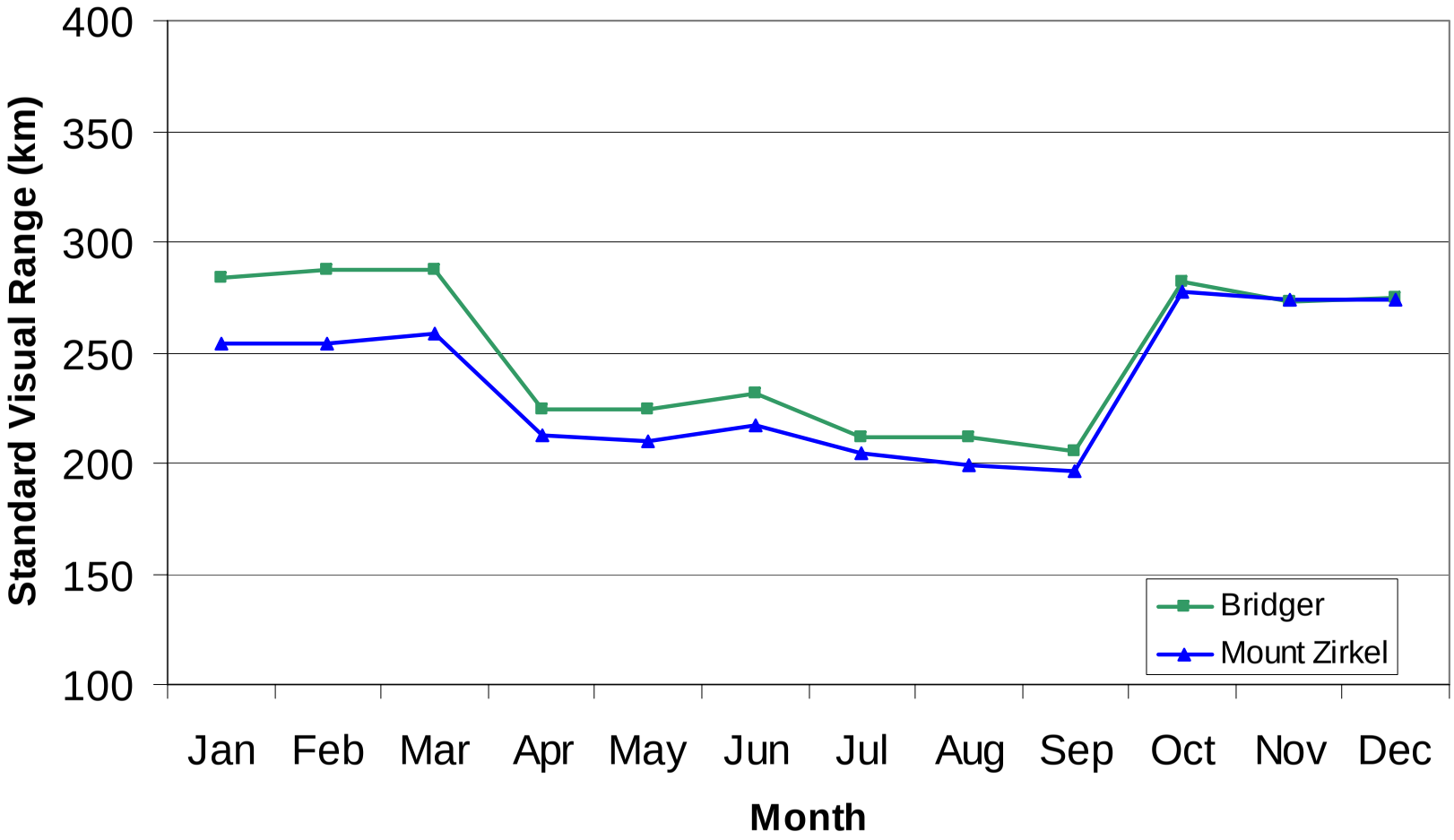



**Figure 3-9. Seasonal Reconstructed 20% Best Visibility Conditions (with Rayleigh Scattering)**

Atmospheric deposition and the acidification of surface water bodies is a concern for sensitive lakes located within wilderness areas. Atmospheric deposition is monitored as part of the National Acid Deposition Program / National Trends Network near Pinedale, Wyoming. Although the monitored deposition values are well below those considered to damage vegetation (USDI-BLM 1996b), even low levels of atmospheric deposition may exceed the acid neutralizing capacity (ANC) of sensitive high mountain lakes (USDI-BLM 1996b). Background ANC levels for monitored mountain lakes within the study area are provided in Table 3-10.

To evaluate potential atmospheric deposition impacts, the FS utilizes an LAC of no greater than 1 microequivalent/liter (:eq/l) change in ANC for sensitive water bodies with existing ANC levels less than 25 :eq/l. A 10 percent change in ANC is considered significant for lakes with existing ANC levels over 25 :eq/l.

**Table 3-10. Background Acid Neutralizing Capacity (ANC) for Monitored Lakes**.

| Wilderness Area | Water Body | Background ANC (µeq/l) |
|---|---|---|
| Bridger | Black Joe Lake | 69.0 [a] |
| | Deep Lake | 61.0 [a] |
| | Hobbs Lake | 68.0 [a] |
| | Upper Frozen Lake | 5.7 [b] |
| Fitzpatrick | Ross Lake | 61.4 [a] |
| Popo Agie | Lower Saddlebag Lake | 55.5 [a] |
| Mount Zirkel | Pothole A-8 | 16.0 [d] |
| | Seven Lakes | 35.5 [d] |
| | Upper Slide Lake | 24.7 [d] |
| Medicine Bow | West Glacier | 26.1 [c] |
| Rawah | Island Lake | 64.6 [a] |
| | Rawah #4 Lake | 41.2 [a] |

Note: The basis for ANC data is the 10th percentile of measurements at the lake outlet when greater than 5 years of data exist. When 5 or less years of data are available, average values are used.

Sources:
a. D. Haddow, USDA-FS, 2001.
a. T. Svalberg, USDA-FS, 2000.
b. R. Musselman, USDA-FS, 2001.
c. A. Mast, USGS, 2001.

### 3.5.1 General Vegetation

Page 3-49, first paragraph, third line. Change “22 species” to “24 species.”

Page 3-49. Replace Table 3-17 with the following Table 3-17.

**Table 3-17. Designated Noxious Weeds and Prohibited Noxious Weeds (Wyoming Weed & Pest Control Act).**

| Scientific Name | Common Name |
|---|---|
| *Agropyron repens* | Quackgrass |
| *Arctium minus* | Common burdock |
| *Cardaria draba, C. pubescens* | Hoary cress, whitetop |
| *Carduus acanthoides* | Plumeless thistle |
| *Carduus nutant* | Musk thistle |
| *Centaurea diffusa* | Diffuse knapweed |
| *Centaurea maculosa* | Spotted knapweed |
| *Centaurea repens* | Russian knapweed |
| *Chrysanthemum leucanthemum* | Ox-eye daisy |
| *Cirsium arvense* | Canada thistle |
| *Convolvulus arvensis* | Field bindweed |
| *Cynoglossum officinale* | Houndstongue |
| *Euphorbia esula* | Leafy spurge |
| *Franseria discolor* | Skeletonleaf bursage |
| *Hypericum perforatum* | Common St. Johnswort |
| *Isatis tinctoria* | Dyers woad |
| *Lepidium latifolium* | Perennial pepperweed |
| *Linaria dalmatica* | Dalmatian toadflax |
| *Linaria vulgaris* | Yellow toadflax |
| *Lythrum salicaria* | Purple loosestrife |
| *Onopordum acanthium* | Scotch thistle |
| *Sonchus arvensis* | Perennial sowthistle |
| *Tamarisk spp.* | Salt cedar |
| *Tanacetum vulgare* | Common Tansy |

Page 3-49, add the following text after Table 3-17:

A component of Wyoming's semiarid rangelands, especially in the Wyoming big sagebrush cover type, are the biological soil crusts that occupy most of the open space not occupied by vascular plants. Biological soil crusts predominantly are composed of cyanobacteria (formerly blue-green algae), green and brown algae, mosses, and lichens. Liverworts, fungi, and bacteria can also be important components. Because they are concentrated in the top 1-4 mm of soil, they primarily affect processes that occur at the soil surface or soil-air interface, including soil stability, decreased erosion potential, atmospheric N-fixation, nutrient contributions to plants, soil-plant-water relations, infiltration, seeding germination, and plant growth. Crusts are well adapted to severe growing conditions, but poorly adapted to compressional disturbances such as trampling by humans and livestock, wild horses, wildlife, or vehicles driving off roads. Disruption of the crusts decreases organism diversity, soil nutrients, stability, and organic matter (Belnap *et al*. 2001).

### 3.5.2 Waters of the United States, Including Wetlands

Page 3-50, Delete the 4th paragraph on page 3-50 starting with "Wyoming General …"/

### 3.8.1 Threatened, Endangered or Proposed for Listing Species of Plants, Wildlife, and Fish

Page 3-65, Table 3-21, delete the Mountain Plover entry from the table.

### 3.8.1.1 Wildlife Species

Page 3-67/68, move the text regarding the Mountain Plover into section 3.8.2 at the end of the **Birds** discussion on page 3-71.

### 3.8.2 Sensitive Plant, Wildlife, and Fish Species

Page 3-73, Table 3-22, add the following entry into the table under "Birds":

| | | | |
|---|---|---|---|
| Mountain Plover | Charadrius montanus | G2/S2B, SZN | Present |

### 3.9 Recreation

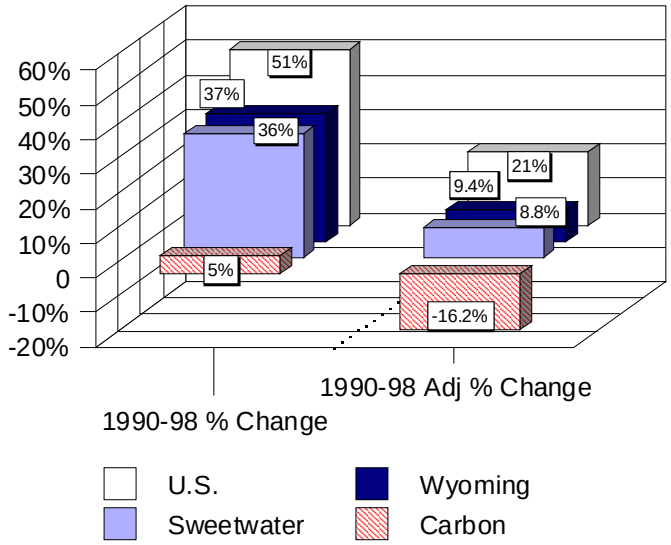
Page 3-75, first paragraph, change both "small" (fourth sentence) and "limited" (fifth sentence) to "moderate."

**3.12.2.3 Earnings** (replace entire section, page 3-89 and 3-90)

Sweetwater County earnings by place of work increased from $633 million in 1990 to $858 million in 1998, a 36 percent increase over the 8 year period (WDAI 2000b). Carbon County earnings increased from $202 million to $211 million during this period, a 5 percent increase. These increases compare to a 37 percent increase in earnings for the State of Wyoming during this period, and a 51 percent increase for the United States as a whole (Figure 3-17). However, when adjusted for inflation, Sweetwater County earnings increased by 8.7 percent from 1990 to 1998, and Carbon County earnings decreased by16.2 percent from their 1990 level. These inflation-adjusted earnings compare to increases of 9.4 percent for the State of Wyoming and 21 percent for the U.S. during this period.

Oil and gas earnings increased 81 percent in Sweetwater County between 1990 and 1998, from $63.7 million to $115 million. When adjusted for inflation, Sweetwater County oil and gas earnings increased 45 percent. Recent Carbon County oil and gas earnings are not disclosed because of the small number of companies in the industry.

**Figure 3-21. Change in Total Earnings 1990 - 1998: Carbon County, Sweetwater County, Wyoming and the U.S. (Current and Inflation Adjusted Dollars)**




## CHAPTER 4: ENVIRONMENTAL CONSEQUENCES

### 4.2 AIR QUALITY

Page 4-7, Replace entire Section 4.2 in DEIS with the following text:

#### 4.2.1 Introduction

##### 4.2.1.1 Scoping Issues

In recent years, the development of mineral resources throughout Wyoming has heightened the public's awareness of air quality. A number of public comments concerning air quality issues were received during the scoping process and are summarized below.

1. Operators should obtain permits and apply Best Available Control Technology (BACT) to all sources of volatile organic compounds (VOC) and hazardous air pollutants (HAP), including sources with emissions below the control thresholds currently set by Wyoming Department of Environmental Quality - Air Quality Division (WDEQ-AQD) policy.

2. Additional air quality monitoring stations should be installed near major sources within the project area to ensure compliance with state and National Ambient Air Quality Standards (NAAQS). This monitoring should include both criteria and hazardous air pollutants.

3. Concerns that prescribed burns may affect air quality monitoring results should be addressed.

4. The public and operator employees should be informed of the risks associated with potential exposure to HAP.

5. Concerns with potential cumulative impacts of atmospheric pollution on Class I wilderness areas should be addressed.

6. Options for off-site mitigation to improve overall air quality in southwest Wyoming should be investigated.

7. The Desolation Flats air quality impact analysis should be tiered off of the previous Continental Divide/Wamsutter II, South Baggs and Pinedale Anticline analyses.

#### 4.2.1.2 Assessment Protocol

An Air Quality Assessment Protocol was developed which proposed the methodologies for quantifying potential air quality impacts from the proposed project and surrounding developments. The criteria for evaluating the significance of the potential air quality impacts were also addressed in the protocol. The protocol was prepared with input from the BLM, State of Wyoming, US Forest Service, and United States EPA Region VIII in conjunction with the project proponents, thereby ensuring that the assessment methodology was technically sound.

In determining the protocol for this assessment, the consensus was to perform a single impact analysis for Alternative A. As proposed, Alternative A provides for an increased well density and production capacity beyond that described in the Proposed Action. Under Alternative A, 592 gas wells would be developed at 555 locations, with a forecasted success rate of 65 percent resulting in 385 producing wells. The producing wells would be supported with six compressor stations and two gas processing plants. Compression and processing requirements for Alternative A are estimated at 32,000 horsepower. The analysis of Alternative A represents an estimate of the maximum impacts that may occur. Potential air quality impacts resulting from the implementation of the Proposed Action and the No Action alternatives would be less than the impacts that may result from the implementation of Alternative A.

### 4.2.2 Impact Significance Criteria

In order to evaluate potential air quality impacts, a scale of measurement or significance criteria must be defined. For this analysis, potential impacts to air quality are considered to be significant if project related emissions cause:

- A violation of Wyoming (WAAQS), Colorado (CAAQS) or national ambient air quality standards (NAAQS); or

- An Exceedance of the PSD increments for Class I or Class II areas; or

- Toxic pollutant concentrations that exceed the acute (1-hour) Reference Exposure Levels (REL) or chronic (annual) Reference Concentrations (RfC); or

- A lifetime incremental increase in cancer risk of one additional incident per million exposures; or

$ Visibility impacts to sensitive areas above the 1.0 ) dv (change in deciview) threshold; or

$ Changes in sensitive lake ANC greater than the designated LAC. For sensitive water bodies with existing ANC levels less than 25 :eq/l, the LAC is no greater than 1 :eq/l. A 10 percent change in ANC is considered significant for lakes with existing ANC levels greater than 25 :eq/l.

### 4.2.3 Direct and Indirect Impacts

Three primary levels of modeling (sub-grid, near-field, and far-field) were used to characterize air quality impacts. Sub-grid modeling was conducted to predict impacts in the immediate vicinity of individual sources (i.e., individual wells and compressor stations) for comparison to state and federal ambient air quality standards and PSD Class II increments. Sub-grid modeling was also utilized to predict hazardous air pollutant concentrations and incremental cancer risks resulting from project related sources. Near-field modeling was conducted to predict impacts within the Desolation Flats project area and 30 miles (50 kilometers) beyond its boundaries. The results of the near-field modeling were compared to state and federal air quality standards and PSD Class II increments. Far-field modeling was used to predict impacts to ambient air quality, PSD Class I increments and Air Quality Related Values (visibility and atmospheric deposition) at eight sensitive areas. Table 4-3 lists the analyzed sensitive areas, the agency responsible for their management, and the average distance from the project area. It should be noted that all comparisons with PSD increments are intended only to evaluate a level of concern and do not represent a regulatory PSD increment consumption analysis. PSD increment consumption analyses are applied to large industrial sources and are solely the responsibility of the State and the Environmental Protection Agency.

Sub-grid modeling was performed using the Industrial Source Complex (ISCST3) model to assess impacts of individual wells and multiple wells in combination with compression stations at distances of up to 4 kilometers (km) from the source. ISC is a Gaussian model that assumes instantaneous straight line transport of pollutants from the source to the receptor. In general, 100 meter grid spacing was used for the sub-grid modeling.

Near-field modeling was performed using the CALPUFF set of models (CALMET, CALPUFF, and CALPOST). The CALPUFF models are Lagrangian puff models that allow for wind meander and long range transport of pollutants. The Near-field modeling was performed for distances out to 50 km from the project area boundary. A 4 km grid spacing was used for the near field modeling.

Far-field modeling was also performed with the CALPUFF set of models for the entire modeling domain of 400 km (north-south) by 500 km (east-west). A four km receptor grid spacing was used throughout the modeling domain (12,500 receptors) supplemented with an additional 401 receptors located at the boundaries and within the eight sensitive areas and an additional twelve receptors located at the sensitive lakes evaluated for atmospheric deposition. Figure 4-1 presents the near- and far-field domains along with the sensitive receptor areas.

Meteorological data used in the ISC model were collected at the South Baggs station in 1995. For CALPUFF, the meteorological input utilized a 1995 meso-scale MM5 simulation as the initial wind field. The MM5 wind field was refined utilizing terrain and land use data along with surface and upper air meteorological data collected at National Weather Service sites in 1995 throughout the region.

In addition to the sub-grid, near-field and far-field analyses, a fourth modeling methodology was used to assess the impacts of vehicles traveling on unpaved support roads. The CALINE4 model was used with hypothetical screening meteorology coupled with traffic volumes determined as part of the emissions estimates.

**Table 4-2. Analyzed Sensitive Areas**

| Sensitive Area | Managing Agency | Average Distance From Project Area (miles/km) | Direction From Project Area |
|---|---|---|---|
| Bridger Wilderness (Class I) | US Forest Service | 140 / 225 | NW |
| Fitzpatrick Wilderness (Class1) | US Forest Service | 155 / 250 | NW |
| Popo Agie Wilderness (Class II) | US Forest Service | 115 / 185 | NW |
| Wind River Roadless Area (Class II) | US Forest Service | 135 / 220 | NW |
| Dinosaur National Monument (Class II) | National Park Service | 65 / 105 | SW |
| Savage Run Wilderness (Class I) | US Forest Service | 85 / 140 | E |
| Mount Zirkel Wilderness (Class I) | US Forest Service | 75 / 120 | ESE |
| Rawah Wilderness (Class I) | US Forest Service | 110 / 180 | ESE |

A fifth modeling methodology was used to assess the potential contribution of VOC emissions to regional ozone concentrations. A simplified Reactive Plume Model (RPM II) screening methodology developed by the EPA (Scheffe 1988) was utilized for the analysis. The Scheffe methodology uses the ratio of VOC to $NO_X$ emissions and the magnitude of the VOC emissions to evaluate potential ozone contribution of point sources. The methodology is a commonly used screening method and is considered very conservative.

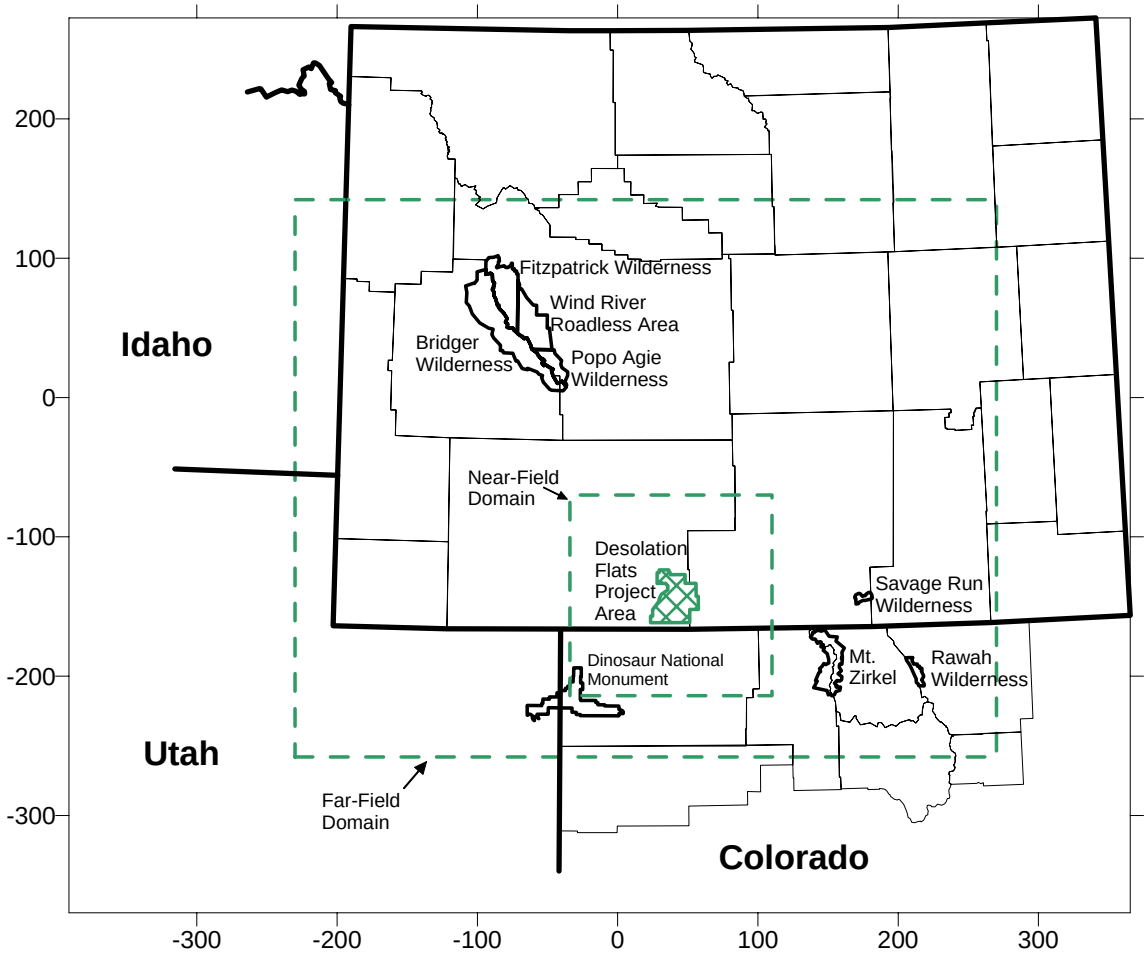
#### 4.2.3.1 Alternative A

##### 4.2.3.1.1 Emission Inventory for Alternative A Project Related Sources

An air emission inventory was developed for all sources proposed under Alternative A. The inventory estimated emissions for five criteria pollutants; oxides of nitrogen ($NO_X$), $SO_2$, CO, particulate matter less than 10 microns ($PM_{10}$), and VOC. The inventory also estimated HAP emissions for six compounds including benzene, toluene, ethylbenzene, and total xylenes (collectively called BTEX), normal-hexane (n-hexane), and formaldehyde.

Project related activities evaluated in the emission inventory included:

- construction emissions, including well pad and resource road construction;
- well drilling, completion and testing;
- wind erosion of disturbed areas;
- well production emissions, and
- gas compression and processing.




Lambert Conformal Projection
Map Origin = 42.55 N, 108.55 W
Std. Parallels: 30 N, 60 N

**Figure 4-1. Modeling Domains and Sensitive Receptor Areas.**

Specific details of the emission inventory are documented in the Air Quality Technical Report. A summary of the emission inventory follows.

Well Development Emissions

Air emissions result from three sequential well development activities: well pad and resource road construction, well drilling, and well completion. Emissions for both regulated pollutants and HAP were estimated for each activity as applicable.

Well pad and resource road construction consists of the clearing, grading, and construction of the road and well pad. The emissions sources associated with these activities include fugitive dust emissions from travel on unpaved roads, heavy construction operations, and tailpipe emissions from mobile sources used in the construction process. It was assumed that controls for these sources would include watering on the well pad and service roads during well pad and resource road construction to control emissions of particulate matter. The watering control

efficiency was assumed to be 50 percent.

Well drilling consists of rigging-up, drilling, and rigging-down. The emissions sources associated with well drilling include fugitive dust emissions from travel on unpaved roads and tailpipe emissions from mobile sources such as heavy duty diesel engine powered trucks and drill rigs used in the drilling process. Particulate matter is assumed to be controlled by watering the unpaved roads, with a control efficiency of 50 percent.

Well completion includes the perforation and stimulation of the producing formations and flow testing. The emission sources associated with well completion include fugitive dust emissions from travel on unpaved roads, tailpipe emissions from mobile sources and flaring of natural gas for well evaluation. Particulate matter is assumed to be controlled by watering the unpaved roads, with a control efficiency of 50 percent.

The water application rate necessary to achieve the assumed 50% fugitive dust control efficiency was estimated. As calculated in accordance with a published EPA methodology (EPA 1988), a daily application rate of 0.02 gallons of water per square yard, or 366 gallons per mile of road, should provide a fugitive dust control efficiency of 50% for this project. Climatic data indicate that natural precipitation would provide adequate water to achieve a 50% control efficiency between 40 to 90 days per year.

Both short-term maximum (hourly) and long-term (annual) emissions were estimated for construction operations. For the calculation of short-term emissions, the consecutive nature of these activities was taken into account. During a one-hour period at any given well, only one of the three development activities; road construction, drilling, or completion, would be taking place. Therefore, short-term emissions were calculated as the single maximum hourly emission rate from each of the three development activities. Long-term well development emissions were estimated on an annual basis assuming a development rate of 45 wells per year. Typically, each constructed well would undergo all three development activities; construction, drilling, and completion, over the course of a year. Therefore, long-term emissions were calculated as the sum of the emissions from the three development activities.

Well Production Emissions

Emissions to the atmosphere result primarily from three aspects of gas production: three-phase separation, triethylene glycol (TEG) dehydration, and condensate storage. The emissions of both criteria pollutants and HAP were estimated for each process as applicable.

At each well, a natural gas-fired three-phase separator heater, rated at 750,000 BTU per hour, will operate an average of 15 minutes per hour throughout the year. In addition, a glycol regeneration heater, rated at 250,000 BTU per hour, is assumed to operate 15 minutes per hour on average throughout the year. To account for seasonal variation in heater operations, the emissions were weighted for the impact analysis. During the winter months of November through April, the heater emissions were weighted at 172% of the average rate, while the remaining summer months were weighted at 28% of the average emission rate.

VOC and HAP emissions from the glycol dehydration system were estimated using Gas Research Institute's (GRI's) GlyCalc emissions estimation program. Dehydrator still vent emissions are dependent upon the produced gas composition and throughput. For this study, predicted emissions from a typical well were calculated assuming an average production rate of

1.0 MMscf/day. The inlet gas composition was estimated by averaging the gas analyses from three existing wells in the study area. HAP concentrations were conservatively estimated at the maximum concentration observed in the three existing wells. Dehydrator emissions were calculated on an individual well and a total project basis. It was assumed that no controls will be required for dehydrator still vent emissions.

Flashing emissions occur as a result of pressure differentials between the separator and the storage tank. For this study, the flashing of VOC and HAP from a condensate storage tank were estimated utilizing a HYSYM process simulation conducted for a well located near the study area. Individual well flashing emissions were based upon an average condensate production rate of two barrels per day. Since the average rate of condensate production is relatively low, it was assumed that no controls would be required for flashing emissions.

Storage tank working and breathing losses occur as a result of the filling and emptying of the storage tanks and the daily heating and cooling of the condensate which results in thermal expansion. An emission estimation program, Tanks 4.0, was utilized to calculate the storage tank emissions. For this analysis, the condensate was assumed to have an average Reid vapor pressure of 8.0. Again, an average condensate production rate of two barrels per day was assumed.

Wind Erosion Emissions

Wind erosion emissions were calculated for disturbed areas, such as the well pad and access roads. The wind erosion estimates were calculated based upon meteorological data measured near Baggs, Wyoming in 1995.

Compression Emissions

The emissions resulting from compression operations were calculated for a total of 32,000 horsepower, based upon estimated project requirements of 30,000 horsepower for gas transportation and 2,000 horsepower for gas plant processing. The type and size of the proposed compressor engines has not been determined, therefore a mixture of engine types; two-stroke and four-stroke, rich-burn and lean-burn, was assumed for the analysis. The capacity of the individual compressor units is expected to range from several hundred horsepower to greater than 1,000 horsepower. Application of state-regulated BACT was considered in estimating compression emissions. Current control technology can reduce $NO_X$ emissions to between 0.7 and 1.5 grams per horsepower-hour (g/hp-hr). $NO_X$ emissions were quantified at the most typical rate of 1.0 g/hp-hr, while CO and VOC emissions were quantified at 3.0 g/hp-hr and 0.5 g/hp-hr respectively. Hazardous air pollutant emission rates were estimated based on AP-42 emission factors.

Total estimated emissions for Alternative A are summarized in Table 4-3. The estimate assumes 45 wells are constructed each year and 385 wells produce a combined 385 MMscf/day of natural gas and 770 bbls/day of condensate.

#### 4.2.3.1.2 Alternative A Sub-grid Impact Analysis

Single Well Sub-grid Analysis

Each phase in the development of a single well; construction, drilling, completion and

production, was analyzed individually. Emissions from the well pad and the associated lease road were included in the analysis. The orientation of the lease road was rotated with respect to the prevailing winds in ten degree increments to determine the greatest impact for all potential site configurations. Table 4-4 presents the potential ambient air quality impacts for each development phase of an individual well. The maximum impact for each individual phase of operation was added to the monitored background concentrations and compared to the applicable ambient air quality standards. As presented in Table 4-5 and Figure 4-2, potential impacts for a single well would not cause an exceedance of the state or federal ambient air quality standards. The predicted well development impacts are also below the Class II PSD increments as shown in Table 4-6.

**Table 4-3. Annual Project Emissions**

| Air Pollutant | Project Emissions (tons/year) | | | |
|---|---|---|---|---|
| | Well Construction and Development [1] | Well Production [2,3] | Gas Compression and Processing [4] | Total Project Emissions |
| $NO_X$ | 721.3 | 41.5 | 309.0 | 1,072 |
| CO | 198.7 | 10.9 | 927.0 | 1,137 |
| VOC | 26.2 | 14,755 | 154.5 | 14,936 |
| $SO_2$ | 12.2 | - | - | 12.2 |
| $PM_{10}$ | 236.2 | 51.4 | 6.8 | 294 |
| Benzene | - | 360.3 | 0.6 | 361 |
| Toluene | - | 902.7 | 0.2 | 903 |
| Ethylbenzene | - | 474.5 | - | 475 |
| Xylenes | - | 624.8 | 0.1 | 625 |
| n-Hexane | 0.1 | 31.6 | - | 31.7 |
| Formaldehyde | 0.1 | 0.03 | 46.3 | 46.4 |

[1] Assumes 45 wells are constructed and developed per year
[2] Assumes 385 gas wells are producing 385 MMscf/day and 770 bbls/day of condensate
[3] Well production emissions include wind erosion
[4] Assumes total compression and processing requires 32,000 hp

**Table 4-4. Ambient Air Quality Impacts Adjacent to a Single Well**

| Pollutant | Averaging Period | Construction Impact (:g/m$^3$) | Drilling Impact (:g/m$^3$) | Completion Impact (:g/m$^3$) | Production Impact (:g/m$^3$) | Maximum Impact (:g/m$^3$) |
|---|---|---|---|---|---|---|
| $NO_2$ | Annual | 0.0026 (400 meters from well pad) | 1.92 (500 meters from drill rig) | 0.014 (500 meters from flare) | 0.02 (500 meters from production heater) | 1.92 (500 meters from rig) |

| | | | | | | |
|---|---|---|---|---|---|---|
| CO | 1-hour | 22.83 (400 meters from well pad) | 123.61 (500 meters from drill rig) | 438.83 (500 meters from flare) | 0.22 (500 meters from production heater) | 438.83 (500 meters from flare) |
| CO | 8-hour | 4.00 (400 meters from well pad) | 59.79 (500 meters from drill rig) | 191.64 (500 meters from flare) | 0.09 (500 meters from production heater) | 191.64 (500 meters from flare) |
| $SO_2$ | 3-hour | 0.83 (400 meters from well pad) | 5.93 (500 meters from drill rig) | 0.012 (200 meters from access road) | 0 | 5.93 (500 meters from drill rig) |
| $SO_2$ | 24-hour | 0.17 (400 meters from well pad) | 2.29 (500 meters from drill rig) | 0.0027 (200 meters from access road) | 0 | 2.29 (500 meters from drill rig) |
| $SO_2$ | Annual | 0.00005 (400 meters from well pad) | 0.032 (500 meters from drill rig) | 0.00001 (200 meters from access road) | 0 | 0.032 (500 meters from drill rig) |
| $PM_{10}$ | 24-hour | 23.69 (200 meters from access road) | 3.48 (400 meters from well pad) | 4.99 (200 meters from access road) | 0.03 (400 meters from well pad) | 23.69 (200 meters from access road) |
| $PM_{10}$ | Annual | 0.0015 (200 meters from access road) | 0.047 (400 meters from well pad) | 0.012 (200 meters from access road) | 0.001 (400 meters from well pad) | 0.047 (400 meters from well pad) |

**Table 4-5. Maximum Ambient Air Quality Impacts for an Individual Well**

| Pollutant | Averaging Period | Maximum Single Well Impact ($:g/m^3$) | Monitored Back-ground Level ($:g/m^3$) | Maximum Impact Plus Back-ground ($:g/m^3$) | National Ambient Air Quality Standard ($:g/m^3$) | Wyoming Ambient Air Quality Standard ($:g/m^3$) | Colorado Ambient Air Quality Standard ($:g/m^3$) | Percentage of Most Stringent Ambient Air Quality Standard |
|---|---|---|---|---|---|---|---|---|
| $NO_2$ | Annual | 1.92 | 3.4 | 5.32 | 100 | 100 | 100 | 5% |
| CO | 1-hour | 438.83 | 2,299 | 2,738 | 40,000 | 40,000 | 40,000 | 7% |
| CO | 8-hour | 191.64 | 1,148 | 1,340 | 10,000 | 10,000 | 10,000 | 13% |
| $SO_2$ | 3-hour | 5.93 | 29 | 34.93 | 1,300 | 1,300 | 700 | 5% |
| $SO_2$ | 24-hour | 2.29 | 18 | 20.29 | 365 | 260 | 365 | 8% |
| $SO_2$ | Annual | 0.032 | 5 | 5.03 | 80 | 60 | 80 | 8% |
| $PM_{10}$ | 24-hour | 23.69 | 47 | 70.69 | 150 | 150 | 150 | 47% |
| $PM_{10}$ | Annual | 0.047 | 16 | 16.05 | 50 | 50 | 50 | 32% |

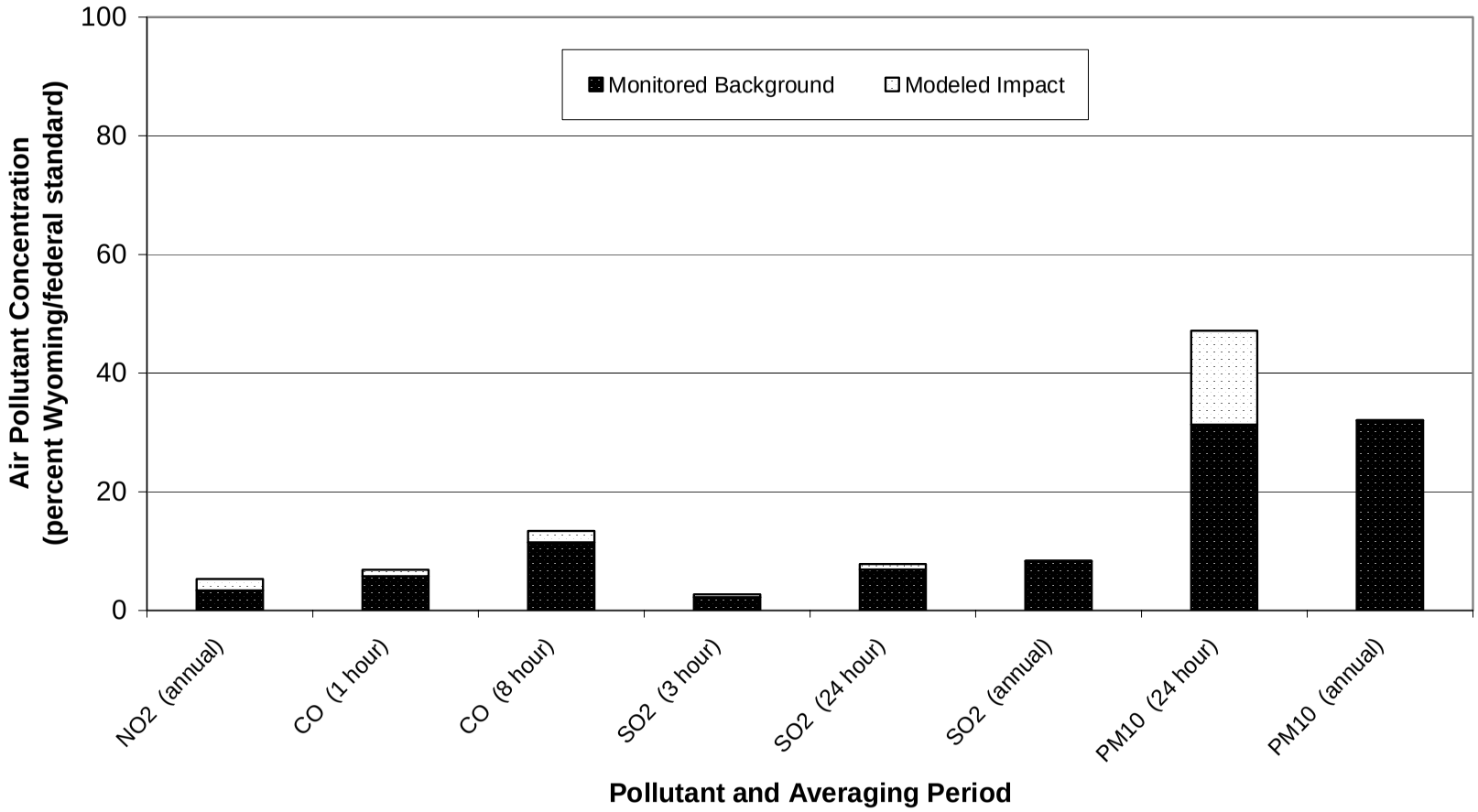



**Figure 4-2. Maximum Ambient Air Quality Impacts for an Individual Well.**

**Table 4-6. Individual Well Increment Comparison**

| Pollutant | Averaging Time | Individual Well Impact (:g/m$^3$) | PSD Class II Increment (:g/m$^3$) | Percentage of Class II Increment (:g/m$^3$) |
|---|---|---|---|---|
| $NO_2$ | Annual | 1.92 | 25 | 8% |
| $SO_2$ | 3-hr | 5.93 | 512 | 1% |
| $SO_2$ | 24-hr | 2.29 | 91 | 3% |
| $SO_2$ | Annual | 0.032 | 20 | 0.2% |
| $PM_{10}$ | 24-hr | 23.69 | 30 | 79% |
| $PM_{10}$ | Annual | 0.047 | 17 | 3% |

Gas Plant and Well Field Sub-grid Analysis

A sub-grid analysis was also performed for a typical gas plant and surrounding well field. For the analysis it was assumed that the gas plant would consist of five separate compressor units totaling 6,000 horsepower. It was also assumed that the gas plant was centered in a producing well field with a density of one well every 40 acres. This development scenario yields the greatest impacts for the combined project sources that are likely to occur. Tables 4-7 and 4-8 present the combined gas plant and well grid impacts and compares the results to the applicable ambient standards and PSD increments. The ambient standard comparisons are also charted in Figure 4-3. As shown, the predicted impacts are below all applicable ambient standards and increment levels.

Support Road Air Pollutant Sub-grid Analysis

The analysis of emissions generated from vehicle traffic on an unpaved support road indicated that the maximum impact is from fugitive dust. The maximum 24-hour average $PM_{10}$ impact is 23.9 :g/m$^3$. When added to the background concentration of 20 :g/m$^3$, the combined impact is 43.9 :g/m$^3$ which is only 29% of the most stringent ambient air quality standard (150 :g/m$^3$).

Hazardous Air Pollutant Sub-grid Analysis

A HAP analysis was conducted for the well field and gas plant development scenario. The potential acute (1-hour exposure) and long-term (i.e., chronic, annual) health effects that may result from the emission of the six previously listed toxins were analyzed. Emissions of each of the hazardous air pollutants were analyzed for their direct impact on health such as headaches, irritation of eyes and throat, and other potential toxic effects. In addition, benzene and formaldehyde emissions were analyzed for their carcinogenic effects.

There are no applicable Federal, Wyoming, or Colorado ambient air quality standards for assessing potential HAP impacts to human health. Therefore, reference concentrations (RfC) for chronic inhalation exposures and Reference Exposure Levels (REL) for acute inhalation exposures are applied as significance criteria. RfCs represent an estimate of the continuous, i.e. annual average, inhalation exposure rate to the human population (including sensitive subgroups such as children and the elderly) without an appreciable risk of harmful effects. The REL is the acute (i.e. one hour average) concentration at or below which no adverse health

effects are expected. Both the RfC and REL guideline values are for non-cancer effects. As summarized in Table 4-9, maximum acute and chronic HAP concentrations are not predicted to exceed the RELs or RfCs. Therefore, no adverse non-carcinogenic human health effects would be expected upon implementation of the project.

Benzene and formaldehyde exposure has been associated with potential carcinogenesis. Carcinogenic impacts are assessed by evaluating annual concentrations, and assuming maximum exposure, 24 hours per day, 365 days per year for the lifetime of the project (30 years). This is termed the maximum exposure scenario. Annual concentrations were predicted for both well and compressor station emissions. Formaldehyde would be emitted primarily from compressor engines and maximum impacts were predicted at a minimum distance of 1,320 feet (400 meters) from a compressor site as this is the building offset that would be required between the construction of any occupied public dwellings and a compressor facility. Benzene emissions would be emitted primarily from wellsite dehydrators.

**Table 4-7. Gas Plant and Well Field Impact**

| Pollutant | Averaging Period | Gas Plant and Well Field Impact (:g/m$^3$) | Monitored Back-ground Level (:g/m$^3$) | Maximum Impact Plus Back-ground (:g/m$^3$) | National Ambient Air Quality Standard (:g/m$^3$) | Wyoming Ambient Air Quality Standard (:g/m$^3$) | Colorado Ambient Air Quality Standard (:g/m$^3$) | Percentage of Most Stringent Ambient Air Quality Standard |
|---|---|---|---|---|---|---|---|---|
| $NO_2$ | Annual | 4.17 | 3.4 | 7.57 | 100 | 100 | 100 | 8% |
| CO | 1-hour | 168.39 | 2,299 | 2,467 | 40,000 | 40,000 | 40,000 | 6% |
| CO | 8-hour | 83.69 | 1,148 | 1,232 | 10,000 | 10,000 | 10,000 | 12% |
| $SO_2$ | 3-hour | 0 | 29 | 29 | 1,300 | 1,300 | 700 | 4% |
| $SO_2$ | 24-hour | 0 | 18 | 18 | 365 | 260 | 365 | 7% |
| $SO_2$ | Annual | 0 | 5 | 5 | 80 | 60 | 80 | 8% |
| $PM_{10}$ | 24-hour | 7.31 | 47 | 54.31 | 150 | 150 | 150 | 36% |
| $PM_{10}$ | Annual | 1.69 | 16 | 17.69 | 50 | 50 | 50 | 35% |

**Table 4.8. Gas Plant and Well Field Increment Comparison**

| Pollutant | Averaging Time | Gas Plant and Well Field Impact (:g/m$^3$) | PSD Class II Increment (:g/m$^3$) | Percentage of Class II Increment (:g/m$^3$) |
|---|---|---|---|---|
| $NO_2$ | Annual | 4.17 | 25 | 17% |
| $SO_2$ | 3-hr | 0 | 512 | 0% |
| $SO_2$ | 24-hr | 0 | 91 | 0% |
| $SO_2$ | Annual | 0 | 20 | 0% |
| $PM_{10}$ | 24-hr | 7.31 | 30 | 24% |
| $PM_{10}$ | Annual | 1.69 | 17 | 10% |

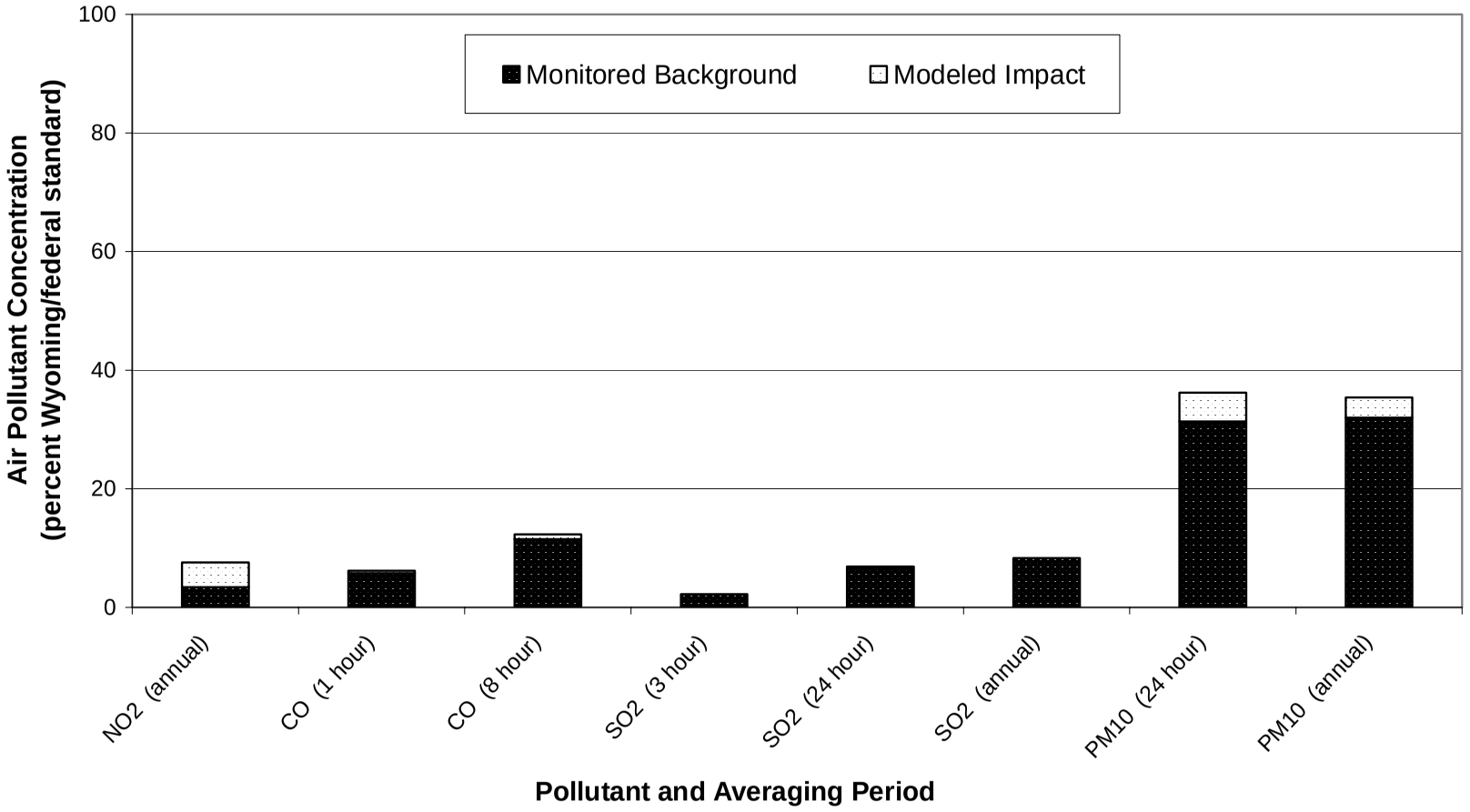



**Figure 4-3. Gas Plant and Well Field Impact.**

The predicted impacts, summarized in Table 4-10, indicate that the maximum incremental cancer risk which may result from benzene emissions is estimated at 2 incidents per million exposures, which exceeds the threshold level of 1 incident per million. The benzene incremental risk is based upon a maximum concentration predicted within 100 meters of a wellsite dehydrator. However, the benzene concentrations decrease rapidly as the distance from the dehydrator increases, and at distances of 300 meters or greater, the benzene concentration is reduced by 50% and the associated incremental cancer risk would be less than 1 incident per million exposures. In light of the remote nature of the DFPA, it is unlikely that wellsite facilities would be constructed within 300 meters of an occupied public building.

***Ozone Sub-grid Analysis***

Ozone is formed in the atmosphere through a series of complex nonlinear chemical reactions involving $NO_X$, VOC and sunlight. The EPA ozone formation screening methodology for point sources (Scheffe 1988) provides an estimate of the maximum potential incremental ozone concentration that could possibly occur due to emissions from the new sources. The maximum potential ozone increment is then added to the current existing maximum background ozone concentration and compared with the ozone standard to determine whether there is a potential for the new sources to cause an exceedance of the ozone standard. If the results of the screening methodology indicate a high potential for an exceedance, a refined analysis is required since the screening methodology is highly conservative.

**Table 4-9. Hazardous Air Pollutant Impacts**

| Hazardous Air Pollutant | Maximum Predicted acute (1-hour) Impact (:g/m$^3$) | Reference Exposure Level (:g/m$^3$) | Acute Impact Percentage of the REL | Maximum Predicted Chronic (annual) Impact (:g/m$^3$) | Reference Concentration (:g/m$^3$) | Chronic Impact Percentage of the RfC |
|---|---|---|---|---|---|---|
| Benzene | 139 | 1,300 [1] | 11 % | 0.71 | 30 [3] | 2 % |
| Toluene | 356 | 37,000 [1] | 1 % | 3.35 | 400 [3] | 1% |
| Ethylbenzene | 191 | 350,000 [2] | Less than 1% | 1.79 | 1,000 [3] | Less than 1% |
| Xylenes | 250 | 22,000 [1] | 1 % | 2.34 | 100 [3] | 2 % |
| n-Hexane | 127 | 390,000 [2] | Less than 1% | 1.94 | 200 [3] | 1 % |
| Formaldehyde | 8.36 | 94 [1] | 9 % | 0.25 | 9.8 [3] | 3 % |

1 - EPA Air Toxics Database, Table 2 (EPA 2002)
2 - Immediately Dangerous to Life or Health (IDLH/10), EPA Air Toxics Database, Table 2 (EPA 2002) since no REL is available
3 - EPA Air Toxics Database, Table 1 (EPA 2003)

The total project $NO_X$ and VOC emissions (wells plus compression at full development) were used in the screening analysis. Construction emissions of VOC are much less than 50 tons per year, and are therefore not expected to cause an increase in ozone concentrations (per the screening methodology). The screening tables indicate a maximum potential ozone formation of 0.009 ppm, or 18 :g/m$^3$. When this maximum potential is added to the background concentrations, the total ozone concentrations are 187 :g/m$^3$ for the 1-hour average as compared to a standard of 235 :g/m$^3$.

**Table 4-10. Potential Incremental Carcinogenic Risk**

| Hazardous Air Pollutant | Incremental Carcinogenic Risk (incidents per million exposures) |
|---|---|
| Benzene | 2 incidents per million exposures at 100 meters from a wellsite.<br><br>Less than 1 incident per million exposures at 300 meters or greater from a wellsite. |
| Formaldehyde | Less than 1 incident per million exposures at 400 meters from a compressor station. |

**Table 4-11. Potential Ozone Impact**

| Pollutant | Averaging Period | Gas Plant and Well Field Impact (:g/m$^3$) | Monitored Back-ground Level (:g/m$^3$) | Maximum Impact Plus Back-ground (:g/m$^3$) | National Ambient Air Quality Standard (:g/m$^3$) | Wyoming Ambient Air Quality Standard (:g/m$^3$) | Colorado Ambient Air Quality Standard (:g/m$^3$) | Percentage of Most Stringent Ambient Air Quality Standard |
|---|---|---|---|---|---|---|---|---|
| $O_3$ | 1-hr | 18 | 169 | 187 | 235 | 235 | 235 | 80% |

#### 4.2.3.1.3 Alternative A Near-Field Impact Analysis

The CALPUFF set of models was applied in a near-field mode (4 to 50 km) to estimate short-term (less than or equal to 24-hour) and long-term (annual) regulated pollutant concentrations for comparisons with federal and state ambient air quality standards within 50 km of the DFPA (Table 4-12 and Figure 4-4). The results are also compared to the PSD Class II increments (Table 4-13).

The maximum predicted concentrations for all PSD pollutants range from much less than 1 percent (for $SO_2$) to 16% (for $PM_{10}$) of the applicable PSD Class II increments. When the maximum estimated concentrations are added to the existing maximum background concentrations, the total estimated concentrations for all regulated pollutants are also less than the applicable federal and state ambient air quality standards. Therefore, potential pollutant concentrations that may result from the project are not expected to cause significant impacts within 30 miles of the project area.

#### 4.2.3.1.4 Alternative A Impacts Within the Monument Valley Management Area

Potential air quality impacts within MVMA were not directly assessed. However, Alternative A impacts within MVMA would not exceed the gas plant and well field impacts previously presented in Tables 4-6 and 4-7. Similarly, support road, ozone, and HAP impacts would not

exceed the previously discussed levels.

**Table 4-12. Alternative A Near-Field Ambient Air Quality Impacts**

| Pollutant | Averaging Period | Total Project Impact (:g/m$^3$) | Monitored Back-ground Level (:g/m$^3$) | Maximum Impact Plus Back-ground (:g/m$^3$) | National Ambient Air Quality Standard (:g/m$^3$) | Wyoming Ambient Air Quality Standard (:g/m$^3$) | Colorado Ambient Air Quality Standard (:g/m$^3$) | Percentage of Most Stringent Ambient Air Quality Standard |
|---|---|---|---|---|---|---|---|---|
| $NO_2$ | Annual | 1.51 | 3.4 | 4.91 | 100 | 100 | 100 | 5% |
| $SO_2$ | 3-hour | 0.15 | 29 | 29.15 | 1,300 | 1,300 | 700 | 4% |
| $SO_2$ | 24-hour | 0.08 | 18 | 18.08 | 365 | 260 | 365 | 7% |
| $SO_2$ | Annual | 0.02 | 5 | 5.02 | 80 | 60 | 80 | 8% |
| $PM_{10}$ | 24-hour | 4.88 | 47 | 51.88 | 150 | 150 | 150 | 35% |
| $PM_{10}$ | Annual | 1.55 | 16 | 17.55 | 50 | 50 | 50 | 35% |

**Table 4-13. Alternative A Near-Field Increment Comparison**

| Pollutant | Averaging Time | Total Project Impact (:g/m$^3$) | PSD Class II Increment (:g/m$^3$) | Percentage of Class II Increment (:g/m$^3$) |
|---|---|---|---|---|
| $NO_2$ | Annual | 1.51 | 25 | 6% |
| $SO_2$ | 3-hr | 0.15 | 512 | 0.03% |
| $SO_2$ | 24-hr | 0.08 | 91 | 0.1% |
| $SO_2$ | Annual | 0.02 | 20 | 0.1% |
| $PM_{10}$ | 24-hr | 4.88 | 30 | 16% |
| $PM_{10}$ | Annual | 1.55 | 17 | 9% |

### 4.2.3.1.5 Alternative A Far-Field Impact Analysis

The CALPUFF model was also applied to estimate the far-field (50 km to over 200 km) ambient air quality and AQRV impacts from the Desolation Flats project. The far-field analysis estimates the total impacts due to the existing background and project sources. Impacts on air quality were estimated at nearby Class I and Class II areas. The sensitive areas include:

- Bridger Wilderness (Class I);
- Fitzpatrick Wilderness (Class I);
- Popo Agie Wilderness (Class II);
- Wind River Roadless Area (Class II);
- Dinosaur National Monument (Class II);
- Savage Run Wilderness (Class I);
- Mount Zirkel Wilderness (Class I), and

- Rawah Wilderness (Class I).

The model was used to estimate ambient $NO_2$, $SO_2$, and $PM_{10}$ concentrations for comparison with federal and state ambient air quality standards and PSD Class I increments and to address potential AQRV impacts. The maximum impacts for all pollutants and averaging times were found to occur at Dinosaur National Monument which is classified as a federal PSD Class II area. However, Colorado affords protection to that portion of Dinosaur National Monument within the state with the more stringent PSD Class I increments for $SO_2$. Table 4-14 and Figure 4-5 present the maximum impacts for the project sources and compare the results to the ambient standards. The estimated concentrations for all pollutants are far below the applicable federal and state ambient air quality standards. In Table 4-15 the impacts for all pollutants at Dinosaur National Monument are compared to the more stringent PSD Class I increments although the Class I increments only apply to $SO_2$. The maximum concentration impacts due to project sources alone are less than one percent of the Class I increments. The far-field ambient concentration impacts for all eight sensitive areas are provided in the Air Quality Technical Report.

Visibility Impacts

Far field impacts of project emissions on visibility degradation at the sensitive receptor areas was evaluated using the IWAQM/FLAG-recommended method (see the Air Quality Technical Report).

In this method, visibility degradation due to the project sources alone was compared against a background visibility condition based on the mean of the 20 percent cleanest days as reconstructed from IMPROVE aerosol data. Two long-term background data sets were available, one at Bridger Wilderness area and one at Mount Zirkel Wilderness area. In order to apply background visibility data consistent with the 1995 inventory date, Bridger data for the period 1987 through June 30, 1995 and Mount Zirkel data for the period 1994 to 1997 were applied. The Bridger IMPROVE data were used to represent background visibility conditions at Bridger, Fitzpatrick, and Popo Agie Wilderness Areas and the Wind River Roadless Area. The Mount Zirkel data were used to represent conditions in Dinosaur National Monument and the Mount Zirkel, Savage Run, and Rawah Wilderness Areas.

There are two thresholds of visibility change which are used for determining the significance of potential impacts: the number of days in which the deciview change ( ) dv) is 1.0 or greater; and the number of days in which the ) dv change is 0.5 or greater. The FS uses the 0.5 ) dv as a LAC threshold in order to protect visibility in sensitive areas. The 1.0 ) dv threshold is used in the Regional Haze Regulations as a small but just noticeable change in haziness and has been used by other agencies as a management threshold. The 0.5 and 1.0 ) dv thresholds are neither standards nor regulatory limits. Rather, they are used to alert the affected land managers that potential adverse visibility impacts may exist and the land manager may wish to look at the magnitude, duration, frequency, and source of the impacts in more detail in order to make a significance determination. The maximum deciview change due to the Desolation Flats project emissions alone is 0.239 ) dv at Dinosaur National Monument (a PSD Class II area), as shown in Table 4-16. Therefore, the estimated visibility impacts due to the project alone do not exceed the LAC thresholds of 0.5 or 1.0 ) dv.

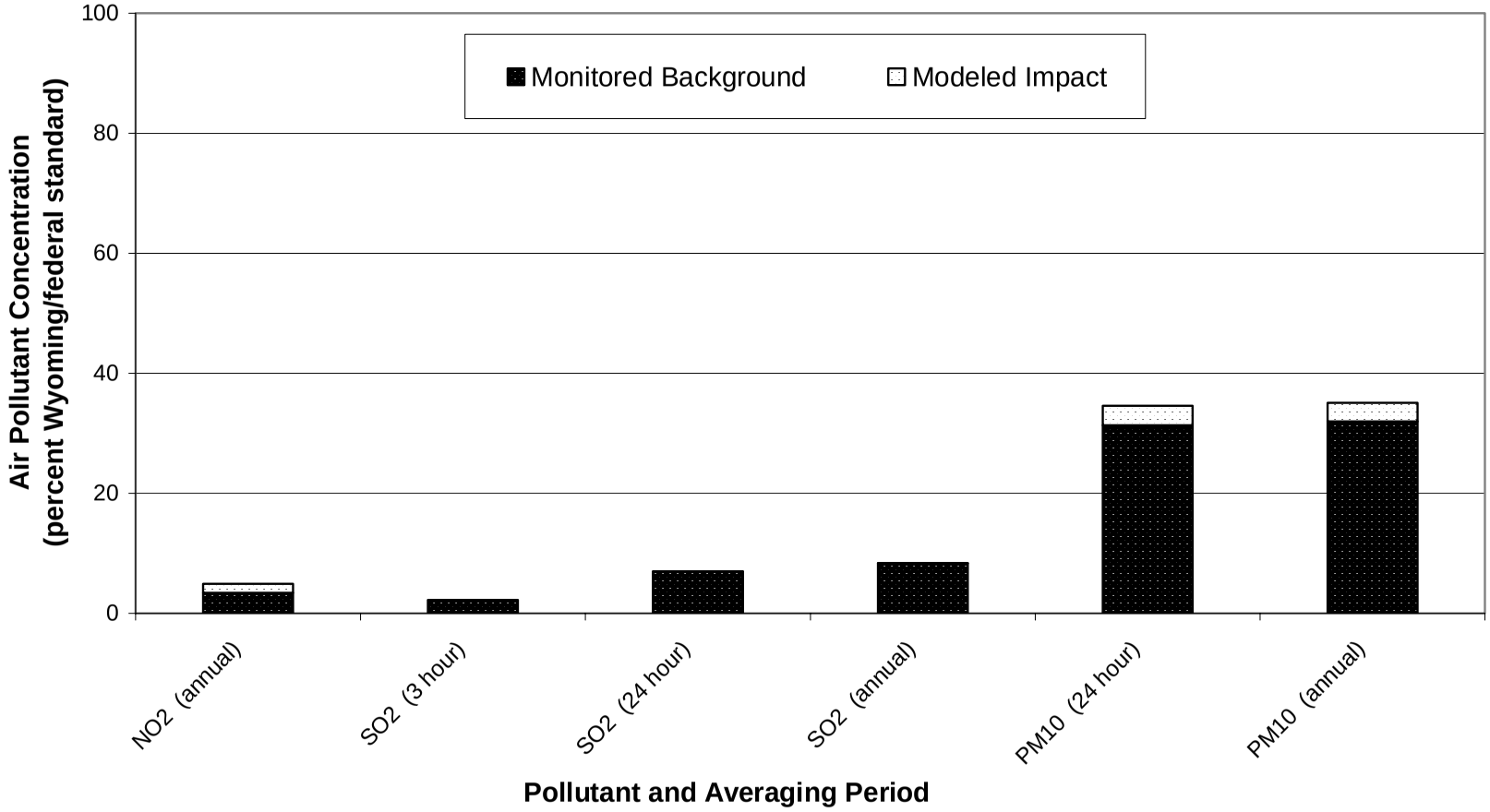



**Figure 4-4. Alternative A Near-Field Ambient Air Quality Impacts.**

**Table 4-14. Alternative A Far-Field Ambient Air Quality Impacts**

| Pollutant | Averaging Period | Total Project Impact (:g/m$^3$) | Monitored Back-ground Level (:g/m$^3$) | Maximum Impact Plus Back-ground (:g/m$^3$) | National Ambient Air Quality Standard (:g/m$^3$) | Wyoming Ambient Air Quality Standard (:g/m$^3$) | Colorado Ambient Air Quality Standard (:g/m$^3$) | Percentage of Most Stringent Ambient Air Quality Standard |
|---|---|---|---|---|---|---|---|---|
| $NO_2$ | Annual | 0.011 | 3.4 | 3.41 | 100 | 100 | 100 | 3% |
| $SO_2$ | 3-hour | 0.017 | 29 | 29.02 | 1,300 | 1,300 | 700 | 4% |
| $SO_2$ | 24-hour | 0.003 | 18 | 18.00 | 365 | 260 | 365 | 7% |
| $SO_2$ | Annual | 0.0001 | 5 | 5.00 | 80 | 60 | 80 | 8% |
| $PM_{10}$ | 24-hour | 0.033 | 47 | 47.03 | 150 | 150 | 150 | 31% |
| $PM_{10}$ | Annual | 0.00007 | 16 | 16.00 | 50 | 50 | 50 | 32% |

**Table 4-15. Alternative A PSD Class I Increment Comparison**

| Pollutant | Averaging Time | Maximum Project Impact (:g/m$^3$) | PSD Class I Increment (:g/m$^3$) | Percentage of Class I Increment (:g/m$^3$) |
|---|---|---|---|---|
| $NO_2$ | Annual | 0.011 | 2.5 | 0.4% |
| $SO_2$ | 3-hr | 0.017 | 25 | 0.07% |
| $SO_2$ | 24-hr | 0.003 | 5 | 0.06% |
| $SO_2$ | Annual | 0.0001 | 2 | 0.005% |
| $PM_{10}$ | 24-hr | 0.033 | 8 | 0.4% |
| $PM_{10}$ | Annual | 0.00007 | 4 | 0.002% |

Atmospheric Deposition and Impacts

The potential impact of the project emission sources on atmospheric deposition were analyzed using the Fox (1989) method (see Air Quality Technical Report). This method was used to estimate the potential change in ANC at each of 12 sensitive lakes (Table 4-17). This approach uses a set of equations to estimate how added deposition may change lake ANC from monitored background conditions. This approach assumes that ANC generation is constant, and does not factor in watershed buffering ability, lake flushing time or aquatic ecosystem bio-geochemistry. However, it does provide a conservative estimate for potential changes in lake ANC.

For lakes with background minimum measured ANC values of 25 :eq/l or greater, the FS has identified a LAC threshold of 10 percent change. For lakes with a minimum ANC background of less than 25 :eq/l, the FS has identified a LAC threshold of 1 :eq/l. Of the twelve lakes

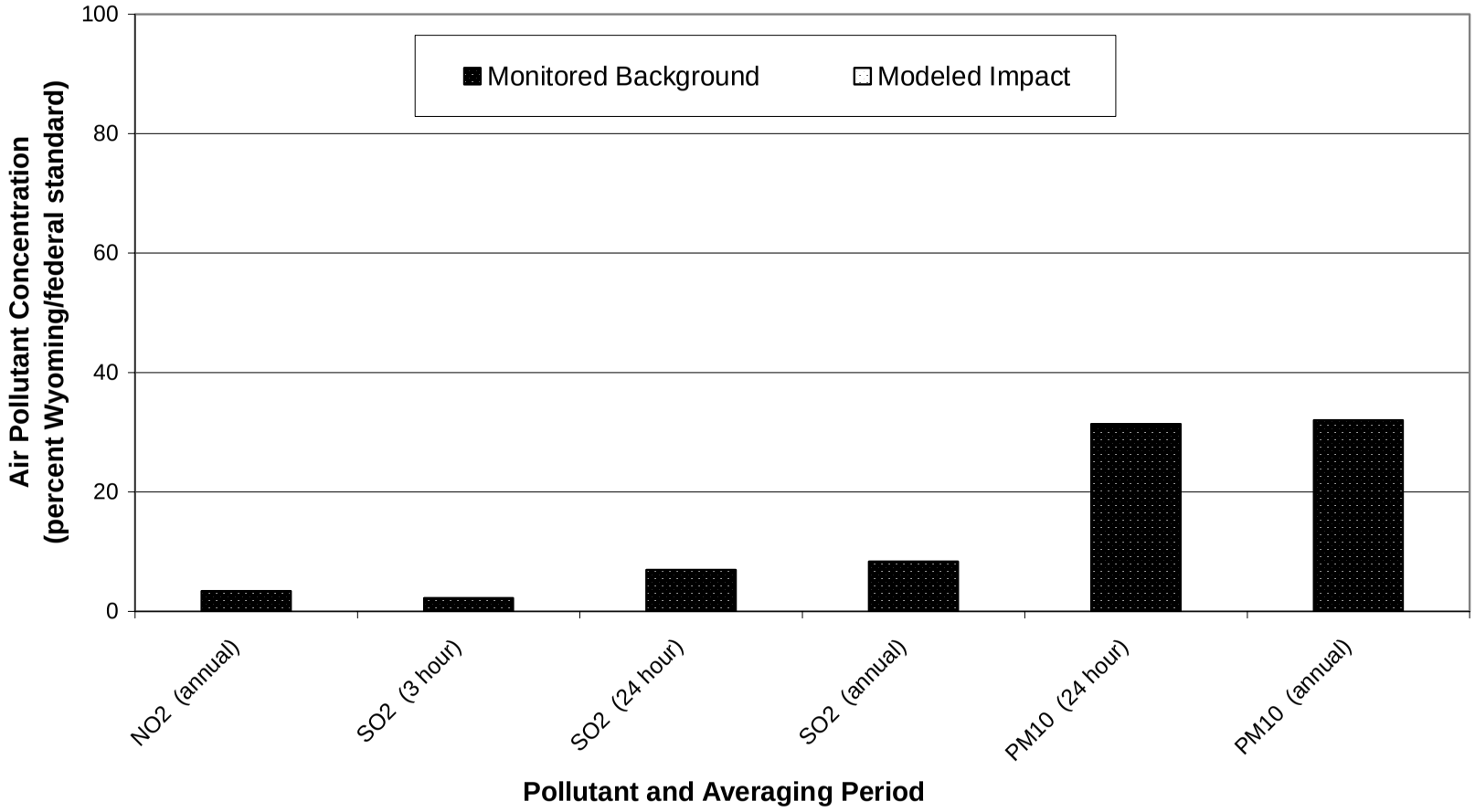



**Figure 4-5. Alternative A Far-Field Ambient Air Quality Impacts.**

analyzed, three have ANC background less than 25 :eq/l. Table 4-17 presents the results of the analysis and indicates that the potential change in sensitive lake ANC is much less than the levels of acceptable change. Therefore, potential changes in lake ANC due to project impacts alone are not expected to be significant.

**Table4-16. Alternative A Predicted Visibility Impacts From the Project**

| Sensitive Receptor Area | Maximum Visibility Impact () dv) | Visibility Significance Criteria () dv) | Number of Days Greater Than 0.5 ) dv | Number of Days Greater Than 1.0 ) dv |
|---|---|---|---|---|
| Bridger Wilderness | 0.079 | 0.5 / 1.0 | 0 | 0 |
| Fitzpatrick Wilderness | 0.046 | 0.5 / 1.0 | 0 | 0 |
| Wind River Roadless Area | 0.048 | 0.5 / 1.0 | 0 | 0 |
| Popo Agie Wilderness | 0.073 | 0.5 / 1.0 | 0 | 0 |
| Dinosaur National Monument | 0.239 | 0.5 / 1.0 | 0 | 0 |
| Savage Run Wilderness | 0.115 | 0.5 / 1.0 | 0 | 0 |
| Mount Zirkel Wilderness | 0.093 | 0.5 / 1.0 | 0 | 0 |
| Rawah Wilderness | 0.079 | 0.5 / 1.0 | 0 | 0 |

### 4.2.3.2 Proposed Action

Under the Proposed Action, 385 wells would be developed with an expected success rate of 65 percent or 250 producing wells. The Proposed Action represents a 35 percent reduction in well development when compared to Alternative A and it is expected that compression requirements for the Proposed Action would also be reduced by a similar percentage. Potential air quality impacts resulting from the implementation of the Proposed Action would be less than those previously described for Alternative A. No significant adverse impacts to air quality are anticipated as a result of the implementation of the Proposed Action.

**Table 4-17. Alternative A Potential Atmospheric Deposition Impacts**

| Sensitive Lake | Sensitive Area | Monitored Background ANC (μeq/l) | Level of Acceptable Change | Change In ANC (μeq/l) | Percentage of LAC |
|---|---|---|---|---|---|
| Black Joe Lake | Bridger Wilderness | 69.0 | 10% (6.9 μeq/l) | 0.008 | 0.12% |
| Deep Lake | Bridger Wilderness | 61.0 | 10% (6.1 μeq/l) | 0.008 | 0.13% |
| Hobbs Lake | Bridger Wilderness | 68.0 | 10% (6.8 μeq/l) | 0.005 | 0.07% |
| Upper Frozen | Bridger | 5.7 | 1 μeq/l | 0.008 | 0.80% |

| | | | | | |
|---|---|---|---|---|---|
| Lake | Wilderness | | | | |
| Ross Lake | Fitzpatrick Wilderness | 61.4 | 10% (6.1 µeq/l) | 0.004 | 0.07% |
| Lower Saddlebag | Popo Agie Wilderness | 55.5 | 10% (5.6 µeq/l) | 0.010 | 0.17% |
| Pothole A-8 | Mount Zirkel Wilderness | 16.0 | 1 µeq/l | 0.037 | 3.70% |
| Seven Lakes | Mount Zirkel Wilderness | 35.5 | 10% (3.6 µeq/l) | 0.069 | 1.92% |
| Upper Slide Lake | Mount Zirkel Wilderness | 24.7 | 1 µeq/l | 0.039 | 3.90% |
| West Glacier Lake | Medicine Bow | 26.1 | 10% (2.6 µeq/l) | 0.044 | 1.69% |
| Island Lake | Rawah Wilderness | 64.6 | 10% (6.5 µeq/l) | 0.031 | 0.47% |
| Rawah #4 Lake | Rawah Wilderness | 41.2 | 10% (4.1 µeq/l) | 0.032 | 0.78% |

#### 4.2.3.3 Alternative B - No Action

Impacts to air quality under the No Action Alternative would occur at allowable levels and no significant impacts are anticipated. Actions approved under the Mulligan Draw EIS and Dripping Rock / Cedar Breaks EA may still be completed within the project area. Completion of the previously approved actions would involve the development of approximately 71 wells, therefore the impacts are expected to be less than Alternative A and the Proposed Action. In the absence of further development in the DFPA, no additional project related air quality impacts would occur.

### 4.2.4 Impacts Summary

No significant adverse impacts to air quality from the project alone are anticipated as a result of the implementation of the Proposed Action, Alternative A or the No Action Alternative. Localized increases in criteria pollutants would occur, but maximum concentrations would be below applicable federal and state standards. Similarly, hazardous air pollutant concentrations and incremental increases in cancer risk would also be below applicable significance levels. Potential impacts to visibility and acid neutralizing capacity would be below the levels of acceptable change. Table 4-18 summarizes the potential impacts that may occur if the project were implemented.

**Table 4-18. Alternative A Impacts Summary**

| Air Quality Component | Potential Impacts |
|---|---|
| **Criteria Pollutant Concentrations** | |

| Air Quality Component | Potential Impacts |
|---|---|
| Ambient Air Quality Standards | Alternative A Gas Plant and Well Field concentrations are in compliance with applicable NAAQS, WAAQS and CAAQS<br>• $NO_2$ concentration 8% of standard<br>• CO concentrations are 6 - 12% of standards<br>• $SO_2$ concentrations 4 - 8% of standards<br>• $PM_{10}$ concentrations 35 - 36% of standards<br><br>Alternative A Near-Field concentrations are in compliance with applicable NAAQS, WAAQS and CAAQS<br>• $NO_2$ concentration 5% of standard<br>• $SO_2$ concentrations 4 - 8% of standards<br>• $PM_{10}$ concentrations 35% of standards<br>• $O_3$ concentration 80% of standard<br><br>Alternative A Far-Field concentrations are in compliance with applicable NAAQS, WAAQS and CAAQS<br>• $NO_2$ concentration 3% of standard<br>• $SO_2$ concentrations 4 - 8% of standards<br>• $PM_{10}$ concentrations 31 - 32% of standards |
| PSD Increments | Alternative A Gas Plant and Well Field concentrations are well below applicable PSD Class II increments<br>• $NO_2$ concentration 17% of increment<br>• $SO_2$ concentration 0% of increments<br>• $PM_{10}$ concentrations 10 - 24% of increments<br><br>Alternative A Near-Field project concentrations are well below applicable PSD Class II increments<br>• $NO_2$ concentration 6% of increment<br>• $SO_2$ concentration 0.03 - 0.1% of increments<br>• $PM_{10}$ concentrations 9 - 16% of increments<br><br>Alternative A Far-Field project concentrations are well below applicable PSD Class I increments<br>• $NO_2$ concentration 0.4% of increment<br>• $SO_2$ concentration 0.005 - 0.07% of increments<br>• $PM_{10}$ concentrations 0.002 - 0.4% of increments |
| **Hazardous Air Pollutant Concentrations** | |
| Acute and Chronic Exposure Levels | Alternative A HAP concentrations are below the acute and chronic human health exposure thresholds<br>• Acute (1-hr) concentrations < 1 - 9% of Reference Exposure Levels<br>• Chronic (Annual) concentrations <1 - 3% of Reference Concentrations |
| Incremental Cancer Risk | Alternative A incremental cancer risk is within a reasonable range<br>• Benzene risk of 2 incidents per million exposures at 100 meters from a wellsite<br>• Benzene risk is reduced to less than 1 incident per million exposures at 300 meters from a wellsite<br>• Formaldehyde risk of less than 1 incident per million exposures at 400 meters from a compressor station. |

| Air Quality Component | Potential Impacts |
|---|---|
| **Visibility Impacts** | |
| Number of Days with Greater Than 0.5 )dv or 1.0 )dv | Alternative A potential visibility impacts would be less than the 0.5 and 1.0 )dv thresholds<br>• Bridger Wilderness 0.079 )dv<br>• Fitzpatrick Wilderness 0.046 )dv<br>• Wind River Roadless Area 0.048 )dv<br>• Popo Agie Wilderness 0.073 )dv<br>• Dinosaur National Monument 0.239 )dv<br>• Savage Run Wilderness 0.115 )dv<br>• Mount Zirkel Wilderness 0.093 )dv<br>• Rawah Wilderness 0.079 )dv |

| Air Quality Component | Potential Impacts |
|---|---|
| **Atmospheric Deposition Impacts** | |
| Lake Acid Neutralizing Capacity Levels of Acceptable Change (LAC) | Changes in lake ANC resulting from Alternative A would Be less than the LACs<br>• Black Joe Lake 0.12% of LAC<br>• Deep Lake 0.13% of LAC<br>• Hobbs Lake 0.07% of LAC<br>• Upper Frozen Lake 0.8% of LAC<br>• Ross Lake 0.07% of LAC<br>• Lower Saddlebag Lake 0.17% of LAC<br>• Pothole A-8 Lake 3.7% of LAC<br>• Seven Lakes 1.92% of LAC<br>• Upper Slide Lake 3.9% of LAC<br>• West Glacier Lake 1.69% of LAC<br>• Island Lake 0.47% of LAC<br>• Rawah #4 Lake 0.78% of LAC |

### 4.2.5 Additional Mitigation Measures

Potential air quality impacts resulting from the project could be reduced through the implementation of engineering controls or other measures. The following potential mitigation measures (Table 4-19) could reduce impacts from emissions. The appropriate level of control will be determined and required by the WDEQ-AQD during the pre-construction permit process.

**Table 4-19. Summary of Potential Mitigation Measures**

| Type of Mitigation | Estimated Cost of Mitigation | Environmental Cost | Environmental Benefit | Potential Limitations |
|---|---|---|---|---|
| **$NO_X$ and CO Mitigation Measures** | | | | |
| Utilize selective catalytic reduction on compressors. | Relatively expensive as compared to non-selective catalysts. Typical costs are $125/horsepower (EPA Cost Control Manual, January 2002). | Requires the use and storage of ammonia, which presents health and safety issues. Results in increased ammonia emissions which may contribute to the formation of ammonium sulfates and increased visibility degradation. | $NO_X$ emission rate reduced to 0.1 g/hp-hr. Reduced ammonium nitrate formation and resulting visibility impacts. | Not applicable for 2-stroke engines. |
| Application of non-selective catalytic reduction. | $5,000 to $25,000 per unit. | Regeneration / disposal costs for catalysts. | As a result of the BACT process, average $NO_X$ emission rates for Wyoming engines 100 hp or greater is 1.0 g/hp-hr. The application of non-selective catalysts may reduce the $NO_X$ emission rate to 0.7 g/hp-hr for some types of engines. | Not applicable for Lean-burn or 2-stroke engines. |

| Type of Mitigation | Estimated Cost of Mitigation | Environmental Cost | Environmental Benefit | Potential Limitations |
|---|---|---|---|---|
| Utilize compressors driven by electrical motors. | Capital costs equal 40% of gas turbine costs. Operating cost dependent upon the location of high voltage power lines. | Displaced air emissions from compressor units to electrical power plant. | May potentially relocate emissions away from sensitive Class I areas. | Requires high voltage power lines. |
| Increased diameter of sales pipelines. | With larger diameter sales pipelines, capital costs increase while operating costs decrease. | Slightly more surface disturbance. | Lower pipeline pressures resulting in lower compression hp requirements. | |
| Utilize wind generated electricity to power compressors. | Capital costs are very large. | Visual impacts from generation equipment. Increased mortality of birds including raptors. | Reduced use of fossil fuels and associated emissions. | Location of wind generation facilities is critical. Requires consistent strong winds for economic operation. Also requires high voltage transmission lines between generation facility and compressor stations. |

| Type of Mitigation | Estimated Cost of Mitigation | Environmental Cost | Environmental Benefit | Potential Limitations |
|---|---|---|---|---|
| Increased Monitoring. | Unknown. | None. | The WDEQ-AQD currently has an emission tracking agreement with the BLM. The *Amended Letter of Agreement for Tracking Nitrogen Oxide Emissions* dated April 2000 calls for annual reports tracking changes in NOX emission beginning January 1, 1996. | The monitoring of emission sources provides improved information for estimating impacts, but does not reduce the magnitude of the impacts. |

| Type of Mitigation | Estimated Cost of Mitigation | Environmental Cost | Environmental Benefit | Potential Limitations |
|---|---|---|---|---|
| Phased development. | Short term loss of State and Federal royalties. | Emissions generated at a lower rate averaged over a longer period. | Peak emissions and associated impacts reduced. | Administration / jurisdiction limitations - The WDEQ-AQD is the regulatory authority for air quality within the State of Wyoming. Therefore, the BLM cannot limit or otherwise restrict development based upon potential air quality impacts.<br><br>Economic limitations - A minimum production rate is required to cost effectively develop the resource while maintaining the processing and transportation infrastructure. |

| Type of Mitigation | Estimated Cost of Mitigation | Environmental Cost | Environmental Benefit | Potential Limitations |
|---|---|---|---|---|
| **Particulate Matter Mitigation Measures** | | | | |
| Increase water application rate to achieve greater than 50% fugitive dust control. | Varies with the source of the water and the trucking distance. | None | Can achieve fugitive dust control rates up to 95%. | Diminishing returns per gallon of water applied. Water must be applied at much greater rates to achieve control efficiencies greater than 75%. |
| Unpaved Road Dust Suppressant Treatments. | $2,400 to $50,000 per mile. | Treatment chemicals have the potential to negatively impact water quality. | Estimated 20% to 100% reduction in fugitive dust emissions. | |
| Administrative control of speed limits | Relatively low costs for installation of signs and enforcement. | None | Slower speeds may provide 20% to 50% reduction in dust emissions. | State or County may retain authority for determining speed limits on primary roads. |

| Type of Mitigation | Estimated Cost of Mitigation | Environmental Cost | Environmental Benefit | Potential Limitations |
|---|---|---|---|---|
| Installation of remote telemetry. | Approximately $13,000 per well. | None | Reduction in vehicle miles traveled and associated vehicle emissions during production operations. No benefit for construction operations which generate the greatest amount of PM. | Effective only for the production phase of the operations. Would have no impact upon construction activities which generate the greatest amount of particulate matter. |
| Gravel roads. | Approximately $9,000 per mile. | None | Estimated 30% reduction in fugitive road dust. | |
| Pave roads. | Approximately $11,000 to $60,000 per mile | None | Estimated 90% reduction in fugitive road dust. | |

| Type of Mitigation | Estimated Cost of Mitigation | Environmental Cost | Environmental Benefit | Potential Limitations |
|---|---|---|---|---|
| Phased development. | Short term loss of State and Federal royalties. | Emissions generated at a lower rate averaged over a longer period. | Peak emissions and associated impacts reduced. | Administration / jurisdiction limitations - The WDEQ-AQD is the regulatory authority for air quality within the State of Wyoming. Therefore, the BLM cannot limit or otherwise restrict development based upon potential air quality impacts.<br><br>Economic limitations - A minimum production rate is required to cost effectively develop the resource while maintaining the processing and transportation infrastructure. |

| Type of Mitigation | Estimated Cost of Mitigation | Environmental Cost | Environmental Benefit | Potential Limitations |
|---|---|---|---|---|
| **VOC and HAP Mitigation Measures** | | | | |
| Use of condenser controls on dehydrator still vents. | $1,000 to $10,000 for capital equipment. | Larger units may require electrical power. | VOC/HAP emission reductions ranging from 1% to 50%. | The effectiveness of passive condensers is dependent upon ambient air temperatures. Control efficiency decreases with increasing temperatures. |
| Use of combination condenser / combustion controls on dehydrator still vents. | $5,000 to $25,000 for capital equipment plus increased maintenance costs. | Larger units may require electrical power. Increased $NO_X$ and CO emissions. | VOC/HAP control rates ranging from 95% to better than 99%. | May require continuous electrical power source for larger units. |
| Minimize dehydrator glycol circulation rates. | Minimal costs associated with increased monitoring and maintenance. | None. | May reduce VOC and HAP emissions by 1% to 50%. | Glycol circulation rates may only be reduced to the point where gas quality still meets pipeline specifications. |

| Type of Mitigation | Estimated Cost of Mitigation | Environmental Cost | Environmental Benefit | Potential Limitations |
|---|---|---|---|---|
| Use of oxidation catalysts on compressor engines. | $5,000 to $10,000 capital costs. | Disposal of spent catalysts. | Typically reduces formaldehyde emissions by 50%. Reductions of up to 90% may be achieved. Also reduces CO emissions by similar percentages. | Not applicable for 2-stroke engines. |
| Use of flares or smokeless combustion units to control vapors from condensate storage tanks | $5,000 to $20,000 per well. | Increased $NO_X$ and CO emissions. May contribute to light pollution. | Reduction in tank emissions of 95% or better. | |
| Use of activated carbon filters on condensate tanks | $1,000 initial capital costs. High maintenance costs. | High energy costs for replacement / regeneration of carbon filters | Estimated 50% to 80% reduction in VOC and HAP emissions. | |
| Green completion / flowback unit. | Capital costs range from $1,000 to $10,000. Operating costs estimated at $1,000 per year. | Potential for reduced gas production. | Potentially reduces completion flaring/venting emissions by 70% to 90%. | |

| Type of Mitigation | Estimated Cost of Mitigation | Environmental Cost | Environmental Benefit | Potential Limitations |
|---|---|---|---|---|
| Phased development. | Short term loss of State and Federal royalties. | Emissions generated at a lower rate averaged over a longer period. | Peak emissions and associated impacts reduced. | Administration / jurisdiction limitations - The WDEQ-AQD is the regulatory authority for air quality within the State of Wyoming. Therefore, the BLM cannot limit or otherwise restrict development based upon potential air quality impacts.<br><br>Economic limitations - A minimum production rate is required to cost effectively develop the resource while maintaining the processing and transportation infrastructure. |

### 4.2.6 Residual Impacts

Implementation of the Proposed Action or Alternative A would cause increased levels of pollutants in the ambient air. As previously discussed, the increased pollutant concentrations are not predicted to exceed ambient air quality standards or PSD increments. The increased pollutant concentrations from the project would not directly cause visibility or atmospheric deposition impacts exceeding the applicable LAC.

With the implementation of one or more of the previously described additional mitigation measures, the emission of air pollutants would be reduced below the levels previously described for Alternative A.

#### 4.4.3.1.1 Surface Water

Page 4-42, delete sentence starting with "However," in the 4th paragraph.

Page 4-43, between second and third paragraph add paragraph: "Dust abatement activities on local roads may use water obtained from SEO-approved surface water sources and/or water wells. Magnesium chloride or other approved dust control chemicals may be used to enhance the effectiveness of these activities. Supplemental materials added to dust abatement water will comply with product labels and state and federal laws. No adverse effects are anticipated from such activity."

Page 4-44, second paragraph, add the following to the end of the paragraph: "No deterioration of surface or ground water quality is anticipated under this project."

#### 4.4.3.2 Alternative A

Page 4-46, second paragraph delete the sentence starting with "The source of …" and in the second sentence change it to read:

> "Water would be obtained from an SEO-approved water well that is non-tributary to the Colorado River System."

#### 4.4.4 Impacts Summary

Page 4-47, delete sentence starting with "However," in the 3rd paragraph.

#### 4.5.3.1 Proposed Action

Page 4-49, change last sentence in fourth paragraph to read: "However with incorporation of invasive/noxious weed management strategies into planning and design processes for all surface disturbance activities, and utilization of other invasive/non-native species mitigations and reclamation, no significant impacts are expected."

Page 4-50, delete from "…or under Wyoming General Permit…" in the first paragraph (third line) to the end of that paragraph.

Page 4-50, add the following text to the end of 4.5.3.1:

Biological soil crusts may be affected by DFPA implementation activities. Crusts are well adapted to severe growing conditions, but poorly adapted to compressional disturbances such as trampling by humans and livestock, wild horses, wildlife, or vehicles driving off roads. Disruption of the crusts can result in localized decreases in organism diversity, soil nutrients, stability, and organic matter. Applicant committed measures, combined with mitigations

reducing off-road vehicular traffic and minimizing soil disturbance will reduce adverse effects on biological soil crusts. Significant effects are not anticipated within the DFPA to biological soil crusts or other associated, related, or dependent biota under this alternative. Effects from Alternative A are anticipated to be slightly greater extent than the proposed action, but still not significant.

### 4.7.1 Introduction

Page 4-56, change paragraph to read, "The principal wildlife impacts likely to be associated with the Proposed Action or alternatives include: (1) a direct loss of certain wildlife habitat, (2) the displacement of some wildlife species, (3) an increase in the potential for collisions between wildlife and motor vehicles, (4) an increase in the potential for the illegal kill and harassment of wildlife, and (5) increased shooter accessibility within the overall DFPA which could result in increased mortality to legally hunted species including prairie dogs and game species.

### 4.7.1.3.6 Combinations of Wildlife Concerns

Page 4-69, at the end of the section, add: "Proposed "Additional Mitigation Measure's" are detailed at 4.7.5, page 4-72."

### 4.7.3.1.1 General Wildlife

Page 4-59, Add the following text at the end of the first paragraph.

"Displacement of wildlife from construction and operational activities would occur, however the extent would vary depending on the specifics of the proposal and the areas effected. In addition, different species and individuals have differing tolerance levels. Subsequent site specific NEPA analysis would provide for minimization or mitigation of adverse impacts, including disturbance".

### 4.7.5 Additional Mitigation Measures

Page 4-72, replace text in the 6th bullet with the following: "No permanent above-ground structures would be constructed within 825 feet for all raptors, except 1,200 feet for ferruginous hawks."

### 4.8.1.2.1 Proposed Action

Page 4-76, replace text starting with "The Proposed Action …" at the end of the 5th paragraph with the following text: "The Proposed Action would deplete approximately 2.3 acre-feet of water per year, and thus a mitigation fee would be applicable. In case water connected to the Colorado River system is inadvertently used by third party contractors or others erroneously, the BLM has consulted with and received concurrence from the USF&WS on the effects of such an action upon endangered fishes."

### 4.8.1.4 Additional Mitigation Measures

Page 4-80, add the following mitigation measure:

"Water used for well drilling operations would be obtained from an SEO-approved water well that is non-tributary to the Colorado River System."

### 4.8.2.2.1 Proposed Action

Page 4-82, White-tailed Prairie Dog, insert the following before the last sentence: "While placement of structures near prairie dog colonies will be avoided where feasible, increased raptor perching with accordingly higher levels of prairie dog predation may occur in the immediate vicinity of such perches, if any occur. The anticipated disturbance…."

Page 4-83, Western Burrowing Owls, change "should" to "will" in the third line of the paragraph. In the same section, fifth line, change "4.7.4.1.6" to "4.7.3.1.5."

Page 4-85, Ferruginous Hawk, fourth line, change "4.7.4.1.6" to "4.7.3.1.5."

### 4.8.2.2.3 Alternative B – No Action

Page 4-89, delete the word "considerably" in the fourth sentence.

### 4.11.3.1 Proposed Action

Page 4-99, add the following after the first paragraph:

"Under the proposed action it is anticipated that 385 oil and gas wells would be drilled (592 for the alternative A), disturbing about 2,029 acres of land (including all related facilities and pipelines) (3,193 acres for alternative A). Standard inventory and recordation procedures conducted in conjunction with actions would protect most cultural resources from significant damage and would increase the database of known cultural properties.

Construction activities resulting from minerals actions that disturb the ground surface and subsurface would have the potential to directly impact cultural resources not identified prior to the activity. Unanticipated subsurface discoveries (cultural resources found during and not prior to ground disturbing activities) would potentially occur from well location, road, and pipeline construction in culturally sensitive areas. Impacts to cultural resources identified in a discovery situation are greater than impacts to resources that were previously identified (and thereby avoided or subjected to mitigation measures) because damage to discovered sites occurs prior to their recordation and evaluation, thereby complicating mitigation procedures. Unanticipated discoveries result in the loss of some or occasionally all of the cultural resource involved. However, mitigation of impacts to discoveries is often accomplished through data recovery excavations that increase our understanding of prehistory.

Areas within ¼ mile of cultural resources eligible to the NRHP under Criteria A, B, or C would be subject to avoidance for all ground disturbing activities. This will ensure the protection of those sites from activities that may compromise the values for which they are eligible.

The visual setting (viewshed) of cultural resources eligible to the NRHP under Criteria A, B, or C would be managed to mitigate adverse visual impacts to a distance of two miles or the visual horizon, for actions which do not exceed 20 feet in height. Development projects that are greater than 20 feet in height would be evaluated on a case-by-case basis to determine the visual impacts greater than two miles. This will ensure the protection of those sites from activities that may compromise the values for which they are eligible."

Page 4-99, add the following at the end of the second (middle) paragraph: "Increased accessibility from roads within the DFPA can increase the amount of illegal artifact collection activity."

Page 4-99, change the first sentence of the last paragraph to read: "Contributing segments of historic trails, including the Cherokee Trail, would be avoided…."

### 4.15.3.1 Proposed Action

Page 4-128, fourth paragraph in the part, change the reference to sage grouse noise sensitivity from "4.7.4.1.4" to "4.7.3.1.4."

# SECTION 2: ADDENDUM AND ERRATA

## CHAPTER 5: CUMULATIVE IMPACT ANALYSIS

### 5.3.2 Climate and Air Quality

Page 5-6, Replace entire Section 5.3.2 of DEIS with the following text:

The CIA area for climate and air quality consists of southwestern Wyoming and northwestern Colorado. Cumulative impacts result from the development of the DFPA and other NEPA approved projects in combination with state permitted sources and other sources not subject to NEPA analysis.

#### 5.3.2.1 Cumulative Emissions Inventory

For the cumulative analysis, three additional emission inventories were developed and combined with the Desolation Flats project emissions. One of the additional inventories accounted for emissions from state permitted sources that began operation between July 1995 and January 2001. Emissions for sources operating before 1995 were assumed to be included in the background monitoring data. Permit records obtained from the WDEQ-AQD and the CDPHE-APCD provided the basis for this inventory. Both permitted emission increases and decreases were accounted for in the inventory. One notable permitted emission decrease was the installation of low $NO_X$ burners on boiler #3 at the Naughton power plant in southwest Wyoming, approximately 130 miles from the DFPA. This control project was financed by Ultra Petroleum and resulted in a reported 1,000 ton per year decrease in $NO_X$ emissions.

A second emission inventory addressed changes in existing well emissions that occurred between the 1995 background monitoring date and January 2001. To account for emissions resulting from new wells drilled in the region and the decline in production or the abandonment of existing wells, production figures between the 1995 inventory date and January 2001 were used to estimate the change in well emissions by county. Both county wide increases and decreases in well emissions were observed in this inventory.

The remaining emission inventory accounted for emissions from Reasonably Foreseeable Development (RFD). The RFD category was comprised of emissions addressed in previously approved NEPA actions that had not been constructed as of January, 2001. Table 5-1 summarizes the NEPA actions included in the analysis while Figure 5-2 presents the location of the projects.

**Table 5-1. NEPA Approved Reasonable Foreseeable Development**

| Approved NEPA Action | Map Symbol | Project Area | Remaining Wells to Be Developed | Remaining Compression to Be Installed (hp) |
|---|---|---|---|---|
| BTA Bravo | BB | 23.80 | 2 | 0 |
| Burley | BR | 3.18 | 16 | 560 [1] |
| CAP Big Piney – Labarge | BP | 501.65 | 200 | 0 |
| Castle Creek Unit | CC | 74.92 | 10 | 0 |
| Continental Divide/Wamsutter II | CD | 3,701.32 | 1,768 | 58,1000 [2] |
| Creston/Blue Gap | CB | 1,272.00 | 156 | 5,460 [3] |
| East LaBarge | EL | 22.30 | 9 | 0 |
| Essex Mountain | EM | 50.67 | 3 | 0 |
| Fontenelle Reservoir | FR | 414.63 | 1,017 | 0 |
| Hickey-Table Mountain EA | HK | 79.54 | 39 | 0 |
| Jake Morrow Hills CAP EIS | JM | 936.82 | 108 | 3,480 |
| Jonah II EIS | J2 | 153.65 | 285 | 0 |
| Miscellaneous Wells – East | WE | 126.94 | 15 | 0 |
| Miscellaneous Wells – West | WW | 1,517.28 | 185 | 0 |
| Moxa Arch | MA | 972.68 | 1,162 | 17,066 |
| Pinedale Anticline EIS | PA | 798.63 | 700 | 26,000 |
| Riley Ridge | RR | 541.40 | 209 | 0 |
| Sierra Madre | SM | 76.68 | 9 | 0 |
| South Baggs | SB | 214.08 | 43 | 2,580 [4] |
| Stagecoach Draw | SD | 150.39 | 59 | 0 |
| Vermillion Basin | VB | 372.29 | 56 | $NO_x$ Specified |
| Bridger-Teton DEIS including the following four management areas: | | | | |
| Hoback Basin | HB | 326.36 | 10 | 0 |
| Moccasin Basin | MB | 234.63 | 5 | 0 |
| Union Pass | UP | 354.63 | 10 | 0 |
| Upper Green River | GR | 617.79 | | |

[1] Compression estimated at 35 hp per well
[2] A total of 70,000 hp was approved, the amount installed was estimated based upon well completion
[3] Compression estimated at 35 hp per well
[4] A total of 3,000 hp was approved, the amount installed was estimated based upon well completion
[5] Compression emissions were specified at 200 tons per year $NO_X$

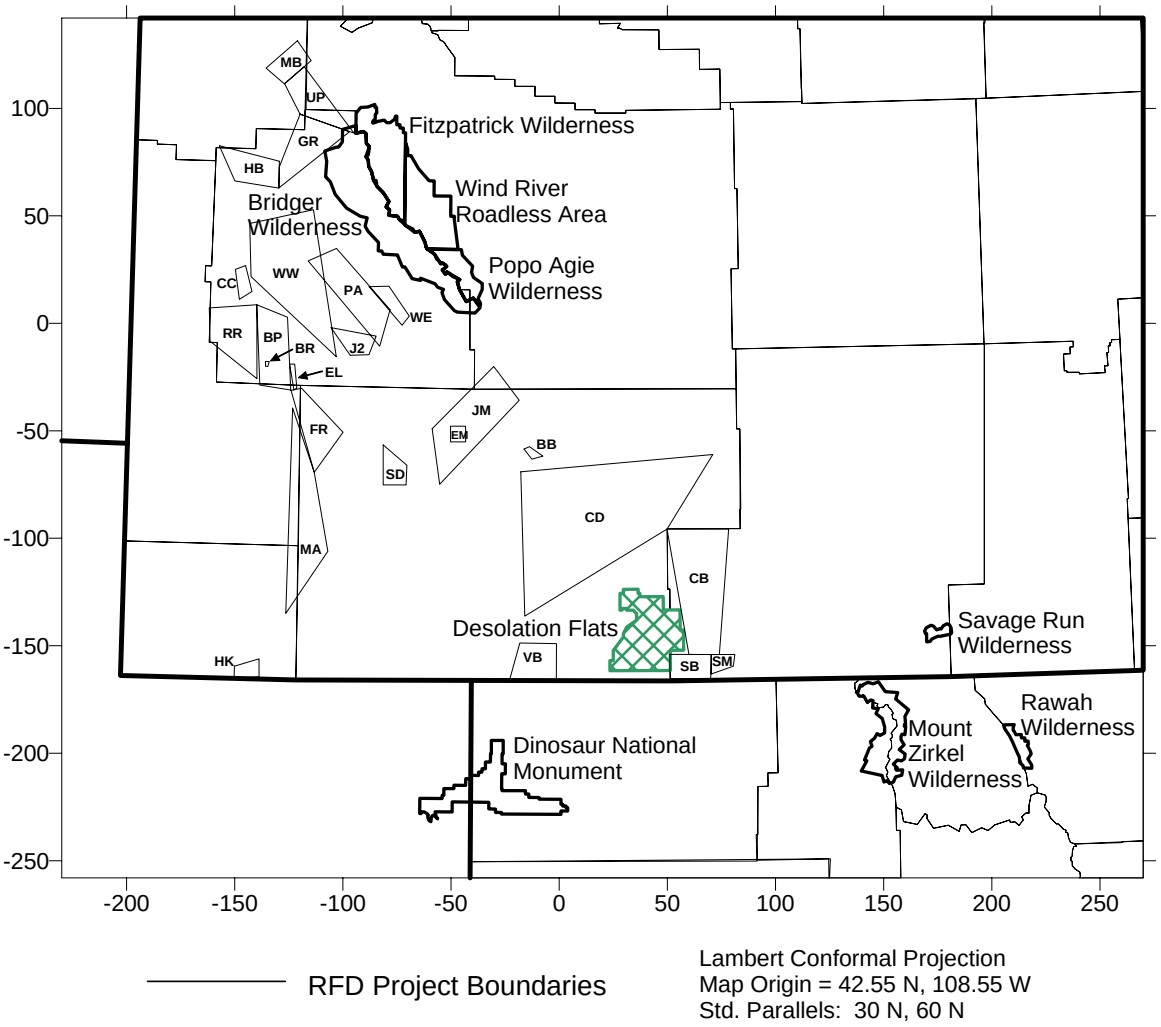



**Figure 5-2. Reasonably Foreseeable Development Projects.**

The estimated emissions from sources permitted between 1995 to 2001, along with the changes in producing well emissions and future RFD emissions were added to the Desolation Flats emissions to obtain the cumulative emissions inventory (see the Air Quality Technical Report for a more detailed discussion of the emission inventories). Table 5-2 presents a summary of the cumulative emission inventory.

**Table 5-2. Cumulative Emission Inventory Summary**.

| Inventory Category | $NO_x$ (TPY) | $SO_x$ (TPY) | $PM_{10}$ (TPY) |
|---|---|---|---|
| Permitted Emission Increases Post 1995 | 7,011 | 4,305 | 2,110 |
| Permitted Emission Decreases Post 1995 (Excluding Naughton) | (1,777) | (557) | (737) |
| Naughton Low $NO_x$ Burners | (1,000) | | |
| Regional Gas Wells Post 1995 | (13) | | |
| Desolation Flats Project | 1,072 | 12 | 295 |
| Reasonably Foreseeable Development | 1,640 | | |
| Cumulative Emissions | 6,933 | 3,760 | 1,668 |

### 5.3.2.2 Cumulative Far-Field Air Quality Impacts

The CALPUFF model was applied to estimate far-field air quality and Air Quality Related Value (AQRV) impacts resulting from cumulative emissions including the Desolation Flats project, state permitted emission sources, producing natural gas wells and approved NEPA actions. Potential impacts on air quality were estimated at PSD Class I and Class II sensitive receptor areas. The analyzed sensitive receptor areas were comprised of:

$ Bridger Wilderness (Class I);
$ Fitzpatrick Wilderness (Class I);
$ Popo Agie Wilderness (Class II);
$ Wind River Roadless Area (Class II);
$ Dinosaur National Monument (Class II);
$ Savage Run Wilderness (Class I);
$ Mount Zirkel Wilderness (Class I), and
$ Rawah Wilderness (Class I).

The CALPUFF model was used to estimate ambient $NO_2$, $SO_2$, and $PM_{10}$ concentrations to evaluate potential cumulative impacts and for comparison with applicable ambient air quality standards and PSD increments. The maximum cumulative impacts from all sources occurred at different sensitive areas depending upon the pollutant under consideration and the applied averaging time. As shown in Tables 5-3 and 5-4, the maximum cumulative impacts from all sources, including Desolation Flats, do not exceed the ambient air quality standards or the PSD Class I increments.

**Table 5-3. Comparison of Cumulative Air Quality Impacts with Ambient Air Quality Standards**

| Pollutant and Averaging Time | Maximum Impact Location | Cumulative Impact (:g/m$^3$) | Monitored Back-ground Level (:g/m$^3$) | Maximum Impact Plus Back-ground (:g/m$^3$) | National Ambient Air Quality Standard (:g/m$^3$) | Wyoming Ambient Air Quality Standard (:g/m$^3$) | Colorado Ambient Air Quality Standard (:g/m$^3$) | Percentage of Most Stringent Ambient Air Quality Standard |
|---|---|---|---|---|---|---|---|---|
| $NO_2$ Annual | Bridger | 0.763 | 3.4 | 4.16 | 100 | 100 | 100 | 4% |
| $SO_2$ 3-hr | Dinosaur | 2.886 | 29 | 31.886 | 1,300 | 1,300 | 700 | 5% |
| $SO_2$ 24-hr | Dinosaur | 0.862 | 18 | 18.862 | 365 | 260 | 365 | 7% |
| $SO_2$ Annual | Dinosaur | 0.014 | 5 | 5.014 | 80 | 60 | 80 | 8% |
| $PM_{10}$ 24-hr | Rawah | 0.105 | 47 | 47.11 | 150 | 150 | 150 | 31% |
| $PM_{10}$ Annual | Dinosaur | 0.004 | 16 | 16.00 | 50 | 50 | 50 | 32% |

**Table 5-4. Comparison of Cumulative Impacts with PSD Class I Increments**

| Pollutant | Averaging Time | Total Project Impact (:g/m$^3$) | PSD Class I Increment (:g/m$^3$) | Percentage of Class I Increment (:g/m$^3$) |
|---|---|---|---|---|
| $NO_2$ | Annual | 0.763 | 2.5 | 31% |
| $SO_2$ | 3-hr | 2.886 | 25 | 12% |
| $SO_2$ | 24-hr | 0.862 | 5 | 17% |
| $SO_2$ | Annual | 0.014 | 2 | 0.7% |
| $PM_{10}$ | 24-hr | 0.105 | 8 | 1.3% |
| $PM_{10}$ | Annual | 0.004 | 4 | 0.1% |

### 5.3.2.3 Cumulative Visibility Impacts

The effects of cumulative emissions on visibility at the sensitive receptor areas were evaluated using the IWAQM/FLAG recommended method (see Air Quality Technical Report). In this method, visibility degradation resulting from cumulative source emissions was compared against a background visibility based on the mean of the 20 percent cleanest days from a long-term record of the IMPROVE aerosol monitoring data. The background data were previously described in Section 4.2.3.1.5. There are two thresholds of visibility change which are used for reporting purposes, the number of days in which the deciview change (delta-deciview or ) dv) is 0.5 or greater and 1.0 or greater. These thresholds were also discussed in Section 4.2.3.1.5.

Table 5-5 presents a summary of the cumulative visibility impact analysis. The analysis indicates that there potentially would be a total of 25 days with greater than 0.5 )dv and 7 days with greater than 1.0 )dv. Table 5-6 lists the number of days greater than 0.5 and 1.0 )dv and the maximum )dv for each sensitive area. Note that although there are 25 days listed, the impacts exceed the thresholds in several areas on the same calendar day. There are only 14 different calendar days with impacts in any area over 0.5 ) dv and 6 different calendar days with impacts over 1.0 ) dv. The greatest number of days greater than 0.5 )dv occurs at the Bridger Wilderness Area. However, the maximum impact of the Desolation Flats Project alone at the Bridger Wilderness area is only 0.079 ) dv, and that occurred on a different day (April 16, 1995) than the maximum cumulative impact (April 10, 1995). On April 10, 1995, the day of maximum cumulative visibility impact, the Desolation Flats contribution to the cumulative total ) dv at the Bridger Wilderness Area is zero ) dv. On average, for the days in which the visibility impact is greater than 1.0 ) dv, the Desolation Flats project contribution is less than two percent, and for all days where the impact is greater than 0.5 ) dv, the average Desolation Flats contribution is five percent. In the absence of the Desolation Flats project, cumulative visibility impacts are reduced by two days with greater than 0.5 ) dv.

**Table 5-5. Summary of Cumulative Visibility Impacts**

| Sensitive Area | Days Greater Than 0.5 ) dv | Days Greater Than 1.0 ) dv | Maximum ) dv |
|---|---|---|---|
| Bridger Wilderness Area | 9 | 5 | 2.315 |
| Fitzpatrick Wilderness Area | 3 | 1 | 1.696 |
| Savage Run Wilderness | 2 | 1 | 1.377 |
| Popo Agie Wilderness Area | 4 | 0 | 0.680 |
| Rawah Wilderness | 3 | 0 | 0.613 |
| Dinosaur National Monument | 2 | 0 | 0.572 |
| Wind River Roadless Area | 1 | 0 | 0.826 |
| Mount Zirkel Wilderness | 1 | 0 | 0.755 |
| Total Visibility Event Days at All Areas | 25 | 7 | |

**Table 5-6. Cumulative Visibility Impacts for All Days Greater Than 0.5 ) dv**

| Rank | Sensitive Area | Julian Day | Cumulative Visibility Impact (dv) | Desolation Flats Project Contribution (dv) |
|---|---|---|---|---|
| 1 | Bridger Wilderness | 100 | 2.315 | 0.000 |
| 2 | Bridger Wilderness | 264 | 1.913 | 0.000 |
| 3 | Bridger Wilderness | 107 | 1.794 | 0.005 |
| 4 | Fitzpatrick Wilderness | 100 | 1.696 | 0.000 |
| 5 | Bridger Wilderness | 110 | 1.442 | 0.014 |
| 6 | Savage Run Wilderness | 116 | 1.377 | 0.115 |
| 7 | Bridger Wilderness | 86 | 1.334 | 0.000 |
| 8 | Bridger Wilderness | 85 | 0.985 | 0.000 |
| 9 | Fitzpatrick Wilderness | 146 | 0.873 | 0.008 |
| 10 | Wind River Roadless Area | 110 | 0.826 | 0.015 |
| 11 | Mount Zirkel Wilderness | 116 | 0.755 | 0.093 |
| 12 | Bridger Wilderness | 124 | 0.752 | 0.004 |
| 13 | Fitzpatrick Wilderness | 124 | 0.716 | 0.000 |
| 14 | Popo Agie Wilderness | 146 | 0.680 | 0.018 |
| 15 | Bridger Wilderness | 146 | 0.660 | 0.016 |
| 16 | Rawah Wilderness | 116 | 0.613 | 0.076 |
| 17 | Rawah Wilderness | 113 | 0.611 | 0.000 |
| 18 | Bridger Wilderness | 106 | 0.606 | 0.079 |
| 19 | Popo Agie Wilderness | 106 | 0.582 | 0.073 |
| 20 | Savage Run Wilderness | 263 | 0.573 | 0.031 |
| 21 | Dinosaur National Monument | 355 | 0.572 | 0.144 |
| 22 | Dinosaur National Monument | 85 | 0.539 | 0.003 |
| 23 | Rawah Wilderness | 263 | 0.536 | 0.043 |
| 24 | Popo Agie Wilderness | 110 | 0.532 | 0.013 |
| 25 | Popo Agie Wilderness | 61 | 0.512 | 0.006 |

### 5.3.2.4 Cumulative Atmospheric Deposition Impacts

The potential impacts of cumulative emission sources on atmospheric deposition were analyzed using the Fox (1989) method (see Air Quality Technical Report). This method was used to estimate the potential change in acid neutralizing capacity (ANC) at each of 12 sensitive lakes. The cumulative potential impacts resulting from atmospheric deposition are summarized in Table 5-7. The predicted change in sensitive lake ANC levels resulting from cumulative source atmospheric deposition were found to be far below the levels of acceptable change.

**Table 5-7. Summary of Potential Cumulative Atmospheric deposition Impacts**

| Sensitive Lake | Sensitive Area | Monitored Background ANC (:eq/l) | Level of Acceptable Change | Change In ANC (:eq/l) | Percentage of LAC |
|---|---|---|---|---|---|
| Black Joe Lake | Bridger Wilderness | 69.0 | 10% (6.9 :eq/l) | 0.246 | 3.56% |
| Deep Lake | Bridger Wilderness | 61.0 | 10% (6.1 :eq/l) | 0.256 | 4.19% |
| Hobbs Lake | Bridger Wilderness | 68.0 | 10% (6.8 :eq/l) | 0.133 | 1.95% |
| Upper Frozen Lake | Bridger Wilderness | 5.7 | 1 :eq/l | 0.271 | 27.1% |
| Ross Lake | Fitzpatrick Wilderness | 61.4 | 10% (6.1 :eq/l) | 0.073 | 1.19% |
| Lower Saddlebag | Popo Agie Wilderness | 55.5 | 10% (5.6 :eq/l) | 0.292 | 5.27% |
| Pothole A-8 | Mount Zirkel Wilderness | 16.0 | 1 :eq/l | 0.194 | 19.4% |
| Seven Lakes | Mount Zirkel Wilderness | 35.5 | 10% (3.6 :eq/l) | 0.279 | 7.85% |
| Upper Slide Lake | Mount Zirkel Wilderness | 24.7 | 1 :eq/l | 0.199 | 19.9% |
| West Glacier Lake | Medicine Bow Wilderness | 26.1 | 10% (2.6 :eq/l) | 0.377 | 14.4% |
| Island Lake | Rawah Wilderness | 64.6 | 10% (6.5 :eq/l) | 0.218 | 3.37% |
| Rawah #4 Lake | Rawah Wilderness | 41.2 | 10% (4.1 :eq/l) | 0.236 | 5.72% |

### 5.3.2.5 Discussion of Significance

The cumulative impact analysis predicts that the maximum criteria pollutant concentrations will not exceed federal or state ambient air quality standards. In addition, cumulative impacts are predicted to be less than the PSD Class I increments. Potential impacts to sensitive lake ANC are less than the applicable limits of acceptable change. Table 5-8 provides a summary of the cumulative impacts.

Visibility impacts of up to 25 days exceeding the 0.5 ) dv threshold are predicted as a result of cumulative emissions. However, the presence or absence of the Desolation Flats Project does not significantly change the predicted cumulative visibility impact. On only two of the 25 event days would the absence of Desolation Flats change the visibility impacts to levels below the thresholds, and these are only for days slightly over 0.5 ) dv. None of the ) dv days over 1.0 would be changed to below the 1.0 threshold with the absence of the Desolation Flats project.

Of the two days that Desolation Flats would contribute to 0.5 ) dv impacts, one occurs at Dinosaur National Monument while the second occurs at Rawah Wilderness.

**Table 5-8. Cumulative Impacts Summary**

| Air Quality Component | Potential Impacts |
|---|---|
| **Criteria Pollutant Concentrations** | |
| Ambient Air Quality Standards | Cumulative source concentrations are in compliance with applicable NAAQS, WAAQS and CAAQS<br>• $NO_2$ concentration 4% of standard<br>• $SO_2$ concentrations 5 - 8% of standards<br>• $PM_{10}$ concentrations 31 - 32% of standards |
| PSD Increments | Alternative A Gas Plant and Well Field concentrations are well below applicable PSD Class II increments<br>• $NO_2$ concentration 31% of increment<br>• $SO_2$ concentration 0.7 - 17% of increments<br>• $PM_{10}$ concentrations 0.1 - 1.3% of increments |
| **Visibility Impacts** | |
| Number of Days Greater Than 1.0 )dv | Cumulative source potential visibility impacts are predicted to exceed the USFS/NPS 1.0 )dv threshold for a total of 7 days<br>• Bridger Wilderness 5 days<br>• Fitzpatrick Wilderness 1 day<br>• Wind River Roadless Area 0 days<br>• Popo Agie Wilderness 0 days<br>• Dinosaur National Monument 0 days<br>• Savage Run Wilderness 1 day<br>• Mount Zirkel Wilderness 0 days<br>• Rawah Wilderness 0 days |
| Number of Days Greater Than 0.5 )dv | Cumulative source potential visibility impacts are predicted to exceed the USFS/NPS 0.5 )dv threshold for a total of 25 days<br>• Bridger Wilderness 9 days<br>• Fitzpatrick Wilderness 3 days<br>• Wind River Roadless Area 1 day<br>• Popo Agie Wilderness 4 days<br>• Dinosaur National Monument 2 days<br>• Savage Run Wilderness 2 days<br>• Mount Zirkel Wilderness 1 day<br>• Rawah Wilderness 3 days |

| Air Quality Component | Potential Impacts |
|---|---|
| **Atmospheric Deposition Impacts** | |
| Lake Acid Neutralizing Capacity Levels of Acceptable Change (LAC) | Changes in lake ANC resulting from cumulative sources would be range from 1.2% to 19.9% of the LACs,<br>• Black Joe Lake 3.6% of LAC<br>• Deep Lake 4.2% of LAC<br>• Hobbs Lake 2.0% of LAC<br>• Upper Frozen Lake 27.1% of LAC<br>• Ross Lake 1.2% of LAC<br>• Lower Saddlebag Lake 5.3% of LAC<br>• Pothole A-8 Lake 19.4% of LAC<br>• Seven Lakes 7.9% of LAC<br>• Upper Slide Lake 19.9% of LAC<br>• West Glacier Lake 14.4% of LAC<br>• Island Lake 3.4% of LAC<br>• Rawah #4 Lake 5.7% of LAC |

### 5.3.2.6 Update of Cumulative Impacts

Scoping for the Desolation Flats project was initiated in June of 2000, and the previously presented cumulative impact assessment was completed in early 2001. Due to delays in publishing this document, the cumulative impacts analysis may no longer represent expected impacts given current conditions.

The Desolation Flats cumulative impact assessment was conducted utilizing a 1995 through 2000 emissions inventory. Since 1995, numerous air pollutant emission sources have been permitted by the WDEQ-AQD and the development of natural resources, including petroleum, natural gas and coal, has continued throughout the state. However, despite this continued development, current monitoring data suggest that visibility conditions and lake chemistry within the region have remained relatively stable, neither improving nor degrading significantly. Current monitoring data have not detected the cumulative visibility impacts predicted in this analysis.

A number of new development projects have been proposed within southwestern Wyoming since the completion of this analysis in 2001. In part, these new development projects include: Powder River Basin Oil and Gas Project, South Piney Natural Gas Development, Jonah Field Infill Drilling, Atlantic Rim CBM, Seminoe Road Gas Development, Wind River Natural Gas Development, Big Porcupine CBM, Copper Ridge Shallow Gas Development, Little Monument Infill Drilling, and the Pacific Rim Shallow Gas Development. Cumulative impacts that may result from all of these new development projects have yet to be determined.

The Powder River Basin Oil and Gas Project Final EIS published in January 2003 may provide more current estimates of cumulative impacts. Other air quality impacts analyses for the southwestern Wyoming region are underway, but are not yet available to the public. Preliminary results suggest that predicted potential cumulative impacts to visibility and atmospheric

deposition may exceed significance criteria, although violations of Wyoming or federal pollutant concentration standards are unlikely. BLM expects that several environmental impact statements will be available to the public in the summer or fall of 2004. The following future documents may provide more timely estimates of potential cumulative impacts in the region.

- $ South Piney Natural Gas Development Project EIS: Contact project lead Carol Kruse at Carol _Kruse @blm.gov
- $ Jonah Infill Drilling Project EIS: Contact project lead Carol Kruse at Carol _Kruse @blm.gov
- $ Atlantic Rim Coalbed Methane Project EIS: Contact project lead David Simons at David _Simons@blm.gov
- $ Seminoe Road Gas Development Project EIS: Contact project lead David Simons at David_Simons@blm.gov
- $ Wind River Natural Gas Development Project EIS: Contact Ramon Nation, BIA - Wind River Agency.

## CHAPTER 6: CONSULTATION AND COORDINATION

There were no changes to Chapter 6 text.

## REFERENCES CITED

Page R-1, Add the following references to the DEIS References Cited section:

Belnap, J. K., J. Hilty, R. Rosentreter, J. Williams, S. Leonard, and D. Eldridge. 2001. Biological soil crusts: ecology and management. USDI-BLM Tech. Ref. 1730-2, Denver, CO.

IMPROVE - Interagency Monitoring of Protected Visual Environments. 2003. Annual Trends (5 Year Rolling Average) Annual Group 10, 50, 90 averages of reconstructed light extinction and the light scattering of the major aerosol types (April 30, 2003). Http://vista.circa.colostate.edu

U. S. Environmental Protection Agency. 1988. Control of Open Fugitive Dust Sources. EPA-450/3-88-008. Office of Air Quality Planning and Standards, Research Triangle Park, North Carolina. September 1988.

U.S. Environmental Protection Agency, 2002. Air Toxics Database. Dose-Response Assessment for Assessing Health Risks Associated with Exposures to Hazardous Air Pollutants, Table 2 - Acute Dose-Response Values (12/02/2002). Office of Air Quality and Planning Standards.

U.S. Environmental Protection Agency, 2003. Air Toxics Database. Dose-Response Assessment for Assessing Health Risks Associated with Exposures to Hazardous Air Pollutants, Table 1 - Prioritized Dose-Response Values (10/28/2003). Office of Air Quality and Planning Standards.

# SECTION 2: ADDENDUM AND ERRATA

## GLOSSARY

There were no changes to Glossary text.

## APPENDIX A: Criteria for Meeting "Acceptable Plan" in Oil and Gas Lease Terms, Desolation Flats Natural Gas Project

There were no changes to Appendix A text.

## APPENDIX B: Standard Mitigation Guidelines

There were no changes to Appendix B text.

## APPENDIX C: Reclamation Plan

There were no changes to Appendix C text.

## APPENDIX D: Hazardous Materials Management Plan

There were no changes to Appendix D text.

## APPENDIX E: Classification of Surface Drainages and Reservoirs/Springs According to NWI Maps
## WYNDD Correspondence Regarding Sensitive Plant Species

There were no changes to Appendix E text.

## APPENDIX F: Wildlife and Fish Species List
## U.S. Fish and Wildlife Service Letter

There were no changes to Appendix F text.

## APPENDIX G: Wildlife Resources – Locations and Types within the DFPA

There were no changes to Appendix G text.

# SECTION 2: ADDENDUM AND ERRATA

### APPENDIX H: Wildlife Monitoring/Protection Plan

There were no changes to Appendix H text.

### APPENDIX I: Biological Assessment of Threatened, Endangered, and Proposed Species

Page I-14, delete 4th paragraph, starting with "Average annual water …"

Page I-15 under section 4.2.2 Fish Species, change to read the same as the paragraph in section 2.2.3.3 Colorado Pikeminnow, Bony …

Page I19, add the following mitigation measure under section 6.2 Fish Species:

> "Water used for well drilling operations would be obtained from an SEO-approved water well that is non-tributary to the Colorado River System."

# SECTION 3:

# CONSULTATION AND COORDINATION

# SECTION 3: CONSULTATION AND COORDINATION

## 3.1 SCOPING PROCESS

The BLM published a Notice of Intent (NOI) to prepare an Environmental Impact Statement (EIS) in the Federal Register on May 18, 2000.

A Scoping Notice was prepared and submitted to the public by the BLM on May 24, 2000, requesting input to the proposed Desolation Flats Natural Gas Field Development project. Scoping documents were sent out to the public listed on the BLM mailing list, as well as organizations, groups, and individuals requesting a copy of the scoping document. The Scoping Notice explained the scope of the Desolation Flats Operator's Proposed Action and requested comments concerning the level of analysis included in the DEIS. The public was given until July 23, 2000 to comment. All comments received were incorporated into the analysis of issues identified in the DEIS (pages 1-19, 1-22, and 1-23). There were 181 written responses received during the scoping period in response to this project.

During preparation of the EIS, the BLM and the consultant interdisciplinary team (IDT) have communicated with, and received or solicited input from various federal, State, county, and local agencies, elected representatives, environmental and citizens groups, industries, and individuals potentially concerned with issues regarding the proposed drilling action. The contacts made are summarized in the following sections.

## 3.2 DRAFT EIS CONSULTATION AND COORDINATION

The BLM consulted with the Department of Interior U.S. Fish and Wildlife Service and the Wyoming Game and Fish Department on issues, impacts and mitigation for Mountain Plover, Black-footed Ferret, and other wildlife populations and habitats; and consulted with the Department of Environmental Protection Agency, the U.S. Forest Service and Wyoming Department of Environmental Quality on issues, impacts and mitigation for air quality and water quality. The BLM has also consulted and coordinated with local, state, and county government officials. Native American Indian tribes were provided notices of the proposed project during scoping and through affirmative contact by mail in early 2004. Mailings in 2004 requested comment and input to the proposal, however none was received.

## 3.3 PUBLIC REVIEW OF DRAFT EIS

The Environmental Protection Agency's Notice of Availability was published in the *Federal Register* on May 2, 2003. Over 250 copies of the draft EIS were made available to the public and interested agencies for a 60-day public comment period. The date by which the comments were to be received was July 23, 1999. The public was invited to provide written comments on the draft EIS. Public meetings were conducted by the BLM on June 5, 2003 at the Rock Springs Field Office in Rock Springs, Wyoming, and on June 4, 2003 at the Rawlins Field Office in Rawlins, Wyoming. The meeting in Rock Springs was attended by 16 persons and the meeting in Rawlins was attended by 31 persons.

# SECTION 3: CONSULTATION AND COORDINATION

All of the comments received during the public comment period and during the public meeting have been considered in the preparation of the final EIS. Responses to all the comments expressed during the public meeting can be found in FEIS Section 5 entitled *Response to Public Comments on the Draft EIS*

## 3.4 DRAFT EIS COMMENTS

A total of 181 comment letters were received on the draft EIS. Responses to public comments received on the draft EIS are included in this final EIS. In many cases respondents submitted virtually identical comments. Rather than repeating a response, the reader may be referred to an earlier response. Reference to a previous response in no way reflects upon the value of the comment. The comment letters and responses to the comments are contained in Section 5 entitled *Response Comments* following the reprinted letters. Comments are numbered sequentially within a letter and correspond to the numbered response.

Specific changes in the text of the draft EIS are found in Section 2 of the final EIS. Where a response to a comment indicates "see Errata", Section 2 of the final EIS should be consulted for the specific rewording or clarification of the text.

## 3.5 COMMON CONCERNS

Respondents shared several common concerns about the proposed drilling project. The concerns were:

- Avoid drilling in environmentally sensitive areas such as wilderness quality lands, roadless lands, and important wildlife habitats.
- Protect all lands within the Adobe Town citizen's proposed WSA.
- Adopt a Conservation Alternative in the FEIS
- Mandate the least environmentally damaging types of drilling.
- The Desolation Flats project exceeds the reasonably foreseeable development scenario from the Great Divide Resource Management Plan.
- Illegal deferral of analysis to subsequent stage of development
- Failure to address the cumulative actions of Oil and Gas Development in the Greater Green River Basin.
- Cultural resource impacts including historic trails, native American involvement, and the extent of existing surveys within the DFPA area,
- Air quality data used in the Draft EIS was outdated for the far field impact analysis.

# SECTION 3: CONSULTATION AND COORDINATION

Comments were received to the Desolation Flats draft EIS included interested State and Federal agencies, advocacy organizations, the public, and oil and gas advocacy groups and companies. Comments in the form of pre-printed postcards were received from apparent members of the public and raised issues 1 through 4 below. These themes were also raised in comments received from advocacy groups. Comments from such groups were much more detailed than the postcard comments. BLM prepared detailed responses to each commenter's issues and concerns. Comments were carefully reviewed for items to correct or add to the final environmental impact statement.

1. *"Avoid drilling in environmentally sensitive areas such as wilderness quality lands, roadless lands, and important wildlife habitats."*

It is the BLM's intent to avoid drilling in environmental sensitive areas as much as it can. Withdrawing lands from leasing is outside the scope of the Desolation Flats EIS process, and cannot properly be considered in this forum. The Adobe Town wilderness study (ATWSA) area is outside but adjacent to the Desolation Flats project area (DFPA). Lands believed to be of wilderness quality are located within the DFPA, and are being considered for inclusion with the ATWSA in the Rawlins Resource Management Plan (RMP) as detailed on page 2-42 and 2-43 of the Draft Environmental Impact Statement (DEIS). As detailed on page 2-43 of the DEIS if proposed development activities are found to potentially impair wilderness values within those areas, the application would be denied pending the outcome of the RMP review process.

The BLM does not have a "roadless lands" category in its land management scheme, but as detailed on page 2-9, any roads will be located to minimize disturbance and maximize transportation efficiency.

While all habitats within the DFPA are considered important habitat to one degree or another, habitats occupied by, or potentially occupied by threatened, endangered, or sensitive species (TES) often have occupancy constraints including avoidance where possible and surveys and mitigations to avoid serious impacts.

2. *"Protect all lands within the Adobe Town citizen's proposed WSA*."

As detailed above some lands within the ATWSA have been observed to have wilderness characteristics. Development activities within those areas will be denied until such time as a decision is made under the RMP revision process to include or exclude those lands from the ATWSA. Some lands within the citizen's proposed WSA have been found not to have wilderness quality. Proposed development activities within those areas, if any occur, will be considered and may be approved.

3. *"Adopt a Conservation Alternative in the FEIS."*

The Desolation Flats EIS contains three alternatives as detailed within the EIS. None of these alternatives are labeled as a "conservation" alternative per se, but each of them assess different levels of development and environmental impacts. Mitigation and monitoring measures to ensure proper protection for the area's special values are found in Chapter 2, at section 2.5.2.11, and in Chapter 4 in sections labeled "Additional Mitigation Measures".

*4. Mandate the least environmentally damaging types of drilling.*

Chapter 2, page 2-43 to 2-44 Section 2.6 of the DEIS entitled "Alternatives Considered but Eliminated From Detailed Study" has details on why mandating directional drilling is not an alternative considered in detail.

*5. The Desolation Flats project exceeds the reasonably foreseeable development scenario from the Great Divide Resource Management Plan.*

The Reasonably Foreseeable Development (RFD) scenario, does not represent a planning decision, rather it is an assumption to analyze the effects that discretionary management decisions have on oil and gas activity. The Great Divide RMP and the oil and gas RFD scenario recognizes development on two levels; 1) number of wells permitted and 2) amount of surface disturbance associated with development. 1,440 wells you mention was just one of the assumptions used, along with other data to determine the effects of oil and gas development. The number of wells permitted is one RFD reference point, the number of surface acres disturbed per well represents another. Surpassing one of these points does not necessarily mean additional development cannot occur. One consideration is the extent of disturbance per well has reduced steadily over the planning period resulting in less disturbance impacts than anticipated per well. Should the number of wells and the level of surface disturbance exceed those analyzed in the Great Divide RMP, BLM would re-examine the RMP assumptions and compare them to actual on-the-ground impacts to determine if further oil and gas exploration and development is an appropriate action.

*6. Deferral of analysis to subsequent stage of development.*

At this time the location of all future well sites and other disturbance cannot be determined with 100% accuracy by any process the proponents or BLM are aware of. "Setting in stone" well locations in the EIS would require predicting well locations with information in hand, and ignoring the fact that each well provides additional information that is utilized to help determine future actions, including the number of wells and well site locations. Currently, generalized areas of interest are being explored through the interim drilling process to further develop our knowledge of the geology and potential of the DFPA. Adaptive management of oil and gas resource development is very much a reality in that new information produces more effective drilling programs with correspondingly reduced effects upon the environment. The number of wells, well locations, timing of drilling, and construction is controlled in part by the location of gas and oil resources as they are found and developed, within the context of BLM's responsibility to ensure surface disturbance is managed in accordance with both the law and sound resource management.

The DFPA is not a project level document, it is a programmatic document. Site-specific impacts will be thoroughly reviewed under the NEPA regulations by tiering site specific environmental analysis to the Desolation Flats Record of Decision (ROD). The regulations for implementing the procedural provisions of the National Environmental Policy Act, issued by the Council on Environmental Quality are found in 40 CFR Parts 1500-1508. 40 CFR 1502.2 States:

> *"Agencies are encouraged to tier their environmental impacts statements to eliminate repetitive discussions of the same issues and to focus on the actual issues ripe for decision at each level of environmental review (1508.28). Whenever a broad environmental impact statement has been prepared (such as a program or policy statement) and a subsequent statement or environmental assessment is then prepared on an action included within the*

*entire program or policy (such as a site specific action) the subsequent statement or environmental assessment need only summarize the issues discussed in the broader statement by reference and shall concentrate on the issues specific to the subsequent action. The subsequent document shall state where the earlier document is available. Tiering may also be appropriate for different stages of actions. (40 CFR 1508.28)"*

The tiered EIS approach used with DFPA is consistent with the CEQ regulations found in 40 CFR. Section 1508.28 states in part:

*"Tiering is appropriate when the sequence of statements or analyses is:*

*(a) From a program, plan, or policy environmental impact statement to a program, plan, or policy statement or analysis of lesser scope or to a site-specific statement or analysis.*

The BLM NEPA Handbook (H1790-1) states in part, in Chapter III, C.:

*1. Purpose and Use of Tiering (40CFR 1508.28) Tiering is used to prepare new, more specific or more narrow environmental documents (e.g., activity plan EA's) without duplicating relevant parts of previously prepared, more general or more narrow environmental documents (e.g. RMP/EIS's)."*

The tiered approach used with DFPA is consistent with BLM agency direction including the NEPA Handbook**.**

*7. Impacts of cumulative actions of oil and gas development in the Greater Green River Basin.*

As detailed in Chapter 5 "Cumulative Impacts Analysis", potential cumulative impacts are assessed at the resource level in the DEIS. Cumulative impacts area (CIA) varies for each resource area assessed. Addressing the cumulative actions of oil and gas development in the entire Greater Green River Basin which encompasses lands in three states is outside the scope of this assessment.

*8. Cultural resource impacts including historic trails, native American involvement, and the extent of existing surveys within the DFPA area.*

Under the proposed action it is anticipated that 385 oil and gas wells would be drilled (592 for the alternative a), disturbing about 2,029 acres of land (including all related facilities and pipelines) (3,193 acres for alternative a). Standard inventory and recordation procedures conducted in conjunction with actions would protect most cultural resources from significant damage and would increase the database of known cultural properties.

Construction activities resulting from minerals actions that disturb the ground surface and subsurface would have the potential to directly impact cultural resources not identified prior to the activity. Unanticipated subsurface discoveries (cultural resources found during and not prior to ground disturbing activities) would potentially occur from well location, road, and pipeline construction in culturally sensitive areas. Impacts to cultural resources identified in a discovery situation are greater than impacts to resources that were previously identified (and thereby avoided or subjected to mitigation measures) because damage to discovered sites occurs prior to their recordation and evaluation, thereby complicating mitigation procedures. Unanticipated discoveries result in the loss of some or occasionally all of the cultural resource involved. However, mitigation of impacts to discoveries is often accomplished through data recovery excavations that increase our understanding of prehistory.

Areas within ¼ mile of cultural resources eligible to the NRHP under Criteria A, B, or C would be subject to avoidance for all ground disturbing activities. This will ensure the protection of those sites from activities that may compromise the values for which they are eligible.

The visual setting (viewshed) of cultural resources eligible to the NRHP under Criteria A, B, or C would be managed to mitigate adverse visual impacts to a distance of two miles or the visual horizon, for actions which do not exceed 20 feet in height. Development projects that are greater than 20 feet in height would be evaluated on a case-by-case basis to determine the visual impacts greater than two miles. This will ensure the protection of those sites from activities that may compromise the values for which they are eligible.

As many areas surrounding the Cherokee Trail have been leased for mineral exploration at this time, there is no way to legally preclude development within five miles of the Cherokee Trail. Surface disturbances within two miles of the Cherokee Trail are assessed to determine what visual impacts they may have on the trail. In areas where development has already occurred, the viewshed has been previously compromised and there is no reason to preclude surface disturbing activities in these areas. Extensive visibility analyses have determined that the two mile viewshed is a reasonable distance to assess visual impacts to historic trails from oil and gas development activities. Surface disturbing activities located within two miles of the historic trail would have special mitigation requirements before being permitted to ensure the least amount of visual intrusion.

9. *Air quality data used in the Draft EIS was outdated for the far field impact analysis.*

In response to comments received concerning air quality impacts with implementation of the Desolation Flats Natural Gas Field Development Project and other projects, *Buys and Associates* prepared a Revised Air Quality Impact Assessment Technical Support Document (USDI-BLM 2004b), and the BLM revised the air quality sections of the draft EIS. Changes to the air quality sections are provided in Section 2, Addendum and Errata of this FEIS. The revised air quality technical support document is available for review at the Rawlins Field Office iRawlins, Wyoming, or on the BLM website **at www.wy.blm.gov**.

# SECTION 4:

# COMMENT LETTERS RECEIVED ON THE DRAFT EIS

# SECTION 5:

# RESPONSE TO COMMENTS

# SECTION 5: RESPONSE TO COMMENTS

Responses to comments are organized by responder and are numbered in the order received. Page and section numbers, unless otherwise noted, refer to the draft EIS issued in April 2003. Comments are summarized here for continuity of response to comment. For full comment text refer to the subject letter number in Section 4.

**COMMENT LETTER 1: GENE R. GEORGE, GENE R. GEORGE AND ASSOCIATES, INC. FOR YATES PETROLEUM CORPORATION**

**Comment 1-1:** It should be noted that under the Wildlife Section that many of the mitigations may be waived by the Authorized Officer as the circumstances warrant.

**Response:** Thank you. Noted.

**Comment 1-2:** Page 2-39 last bullet on the page. This should be rewritten to state: "To protect migratory birds and wildlife in general, all reserve pits and temporary workover pits that contain materials potentially hazardous to wildlife would be fenced and that other pits and areas that contain materials potentially hazardous to wildlife would possibly be both netted and fenced, in accordance with BLM requirements". Essentially, reserve pits and workover pits only contain RCRA exempt materials and not "hazardous wastes".

**Response:** BLM believes the existing text adequately covers the condition. There will be pits that do not require netting and fencing, but ANY pit with hazardous materials in it will require netting and fencing.

**Comment 1-3:** Page 3-39, 3.4.2.3 Waters of the US, It might aid to reference the COE General Permit 98-08 which considers most oil and gas disturbances.

**Response:** Many actions may fall under permits issued by the COE. 98-08 permitting may or may not be used depending on the specifics of the situation. Actions proposed and approved under the Desolation Flats EIS Record of Decision will comply with the provisions of Section 404 of the Clean Water Act.

**Comment 1-4:** Page 4-119, Figure 4-15. It appears that the Federal Mineral Royalties block in the diagram representing $1,609,000 is equal to the line representing $1,500,000.

**Response:** Thank you for your observation. Corrections to the socioeconomic analyses in Chapter 4 have been made. Please see the Errata, Section 2 of the FEIS for these corrections.

**Comment 1-5:** Page 5-11, 5.3.2.3 Cumulative Visibility Impacts, The CalPuff model, using the IWAQM/FLAG method is extremely conservative. Only a model can calculate a 1/2dv change. To a human eye, a one half of a perceptible change in visibility is impossible by definition. Yates applauds the conclusion that it is background rather than the DF project that affects nearly all of the modeled changes.

**Response:** New analysis for the FEIS further details the effects anticipated for the DFPA air quality.

**Comment 1-6:** Page 5-25 5.3.10 Visual Resources, The analysis of determining that a few "viewers" would be dissatisfied is short sighted. The oil and gas activity is short term relative to Wyoming's history. All of the oil and gas activity will be reclaimed and the viewshed will become "historical" within a lifetime.

**Response:** The BLM notes that your assertion is correct This impact is important to be disclosed and discussed because those here and now will, based on each person individual values, needs, and priorities, be impacted by the change in viewshed.

**Comment 1-7:** Page H-5, Table H-2, Yates applauds this type of monitoring. Yates is extremely interested in the actual (not perceived) impact of its oil and gas activity. Yates participates in this same type of monitoring and mitigation elsewhere on the BLM lands and it is working well.

**Response:** Thank you for your comment.

**COMMENT LETTER 2: TED KERASOTE**

**Response:** Thank you for your comment.

**COMMMENT LETTER 3: DAVE KELSER**

**Response:** Thank you for your comment.

**COMMENT LETTER 4: CAROL AND MEL LONG (Note: As this comment was received from approximately 139 commenters (Letter Numbers 5, 6, 8, 9, 12, 14, 15, 16, 17, 18, 19, 20, 21 , 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45 ,47 ,48 ,49 ,50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 61, 62, 63, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97,98, 100, 101, 103, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 147, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 163, 166, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, and 181) the BLM's response is directed at all of those comments.)**

**Comment 4-1:** Avoid drilling in environmentally sensitive areas, protect all lands in the Adobe Town citizen's proposed WSA, adopt a conservation alternative in the FEIS, mandate the lease environmentally damaging types of drilling.

**Response:** *Avoid drilling in environmentally sensitive areas such as wilderness quality lands, roadless lands, and important wildlife habitats.*
It is the BLM's intent to avoid drilling in environmental sensitive areas as much as it can. Withdrawing lands from leasing is outside the scope of the Desolation Flats EIS process, and cannot properly be considered in this forum. The Adobe Town wilderness study (ATWSA) area is outside but adjacent to the Desolation Flats project area (DFPA). Lands believed to be of wilderness quality are located within the DFPA, and are being considered for inclusion with the ATWSA in the Rawlins Resource Management Plan (RMP) as detailed on page 2-42 and 2-43 of the Draft Environmental Impact Statement (DEIS). As detailed on page 2-43 of the DEIS if

proposed development activities are found to potentially impair wilderness values within those areas, the application would be denied pending the outcome of the RMP review process.

The BLM does not have a "roadless lands" category in its land management scheme, but as detailed on page 2-9, any roads will be located to minimize disturbance and maximize transportation efficiency.

While all habitats within the DFPA are considered important habitat to one degree or another, habitats occupied by, or potentially occupied by threatened, endangered, or sensitive species (TES) often have occupancy constraints including avoidance where possible and surveys and mitigations to avoid serious impacts.

*Protect all lands within the Adobe Town citizen's proposed WSA.*
As detailed above some lands within the ATWSA have been observed to have wilderness characteristics. Development activities within those areas will be denied until such time as a decision is made under the RMP revision process to include or exclude those lands from the ATWSA. Some lands within the citizen's proposed WSA have been found not to have wilderness quality. Proposed development activities within those areas, if any occur, will be considered and may be approved.

*Adopt a Conservation Alternative in the FEIS*
The Desolation Flats EIS contains three alternatives as detailed within the EIS. None of these alternatives are labeled as a "conservation" alternative per se, but each of them assess different levels of development and environmental impacts. Mitigation and monitoring measures to ensure proper protection for the area's special values are found in Chapter 2, at section 2.5.2.11, and in Chapter 4 in sections labeled "Additional Mitigation Measures".

*Mandate the least environmentally damaging types of drilling.*
Chapter 2, page 2-43 to 2-44 Section 2.6 entitled "Alternatives Considered but Eliminated From Detailed Study" has details on why mandating directional drilling is not an alternative considered in detail. Further insight to directional drilling can also be found on the internet at: http://www.wy.blm.gov/nepa/rsfodocs/vermbasin/VBPA-well-architecture-letter.pdf.

**COMMENT LETTER 7: JOHN WAHL**

**Response:** Thank you for your comment.

**COMMENT LETTER 10: LINDA J. COOPER**

**Response:** Thank you for your comment.

**COMMENT LETTER 11: BUCK TILTON**

**Response:** Thank you for your comment.

**COMMENT LETTER 13: KENNETH JOHN GILMOUR**

**Response:** Thank you for your comment.

**COMMENT LETTER 46: LIELA BRUNO**

**Response:** Thank you for your comment.

**COMMENT LETTER 60: WILLIAM L. BAKER**

**Response:** Thank you for your comment.

**COMMENT LETTER 64: SCOTT EHRINGER**

**Response:** Thank you for your comment.

**COMMENT LETTER 81: JUDITH K. POWERS**

**Response:** Thank you for your comment.

**COMMENT LETTER 82: MEGAN PLANT**

**Response:** Thank you for your comment.

**COMMENT LETTER 83: BARB PARSONS**

**Response:** Thank you for your comment.

**COMMENT LETTER 99: MARY LOU MORRISON**

**Response:** Thank you for your comment.

**COMMENT LETTER 102: DRU BROWER, PETROLEUM ASSOCIATION OF WYOMING**

**Comment 102-1:** Applicant committed measure comments.

**Response:**
1. BLM believes the proposed project has provided sufficient mitigation to protect the environment.
2. BLM agrees with this assertion.

3. Based on many years of monitoring and adaptive management based on problems and crossing failures, BLM believes drainage crossing structures should meet the 50 year discharge event standards for this project.
4. BLM agrees with this statement.

**Comment 102-2:** PAW agrees with BLM stance on wild horses.

**Response:** The BLM has recently implemented a program for controlling wild horse herd levels, and hopes funding and approval will continue to be forthcoming.

**Comment 102-3:** BLM has significant flexibility in developing protective measures for Greater Sage-Grouse.

**Response:** The BLM will consider the effects of restrictions on the oil and gas operator as part of its adoption of reasonable and prudent mitigation measures to minimize impacts on wildlife.

**Comment 102-4:** PAW opposes the extreme mitigation measure "In areas of overlapping big game crucial range, the number of locations may be reduced (less than 4) in order to minimize habitat loss…"

**Response:** The reason additional potential mitigation measures in Section 4.7.5 are proposed is detailed in Chapter 4, particularly Section 4.7.6. The BLM feels there is adequate support to include these measures in the DFPA process and Record of Decision when it is made.

**Comment 102-5:** The status of the Mountain Plover as "proposed for listing" allows for flexibility in developing protective measures for the species.

**Response:** The BLM will consider the effects of restrictions on the oil and gas operator as part of its adoption of reasonable and prudent mitigation measures to minimize impacts on wildlife.

**Comment 102-6:** Page 4-78, 4.8.1.4, Additional Mitigation Measures. The BLM has no authority to mandate this requirement.

**Response:** The BLM has the authority and responsibility to require mitigations it feels are necessary prior to approving relevant actions.

**Comment 102-7:** Appendix H, Wildlife Monitoring/Protection Plan. Should all the provisions in this section be implemented, BLM will be overwhelmed with data.

**Response:** As the extent of oil and gas development grows in the Rawlins Field Office, we have observed that traditional monitoring processes may need to be adaptively managed to allow more effective and less time consuming and costly monitoring. The use of MMS royalties for funding monitoring surveys is outside the scope of the DFPA EIS process.

**Comment 102-8:** Socioeconomics are an important part to this cumulative analysis and were appropriately incorporated into the EIS.

**Response:** Thank you for your comment.

**Comment 102-9:** Industry recognizes the importance of protecting the environment while developing the much needed natural resources to markets throughout the nation.

**Response:** Thank you for your comment.

**COMMENT LETTER 104: DAN TEIGEN, CHAIRMAN, NORTHERN PLAINS RESOURCE COUNCIL**

**Response:** BLM apologizes for this oversight. Thank you for your comment.

**COMMENT LETTER 105: TRACY J. WILLIAMS, OFFICE OF THE GOVERNOR, STATE OF WYOMING**

**Comment 105-1:** We ask that you review the amount of state acreage within the project area so as to have an accurate count.

**Response:** The acreage totals reflected in Chapter 1, Table 1-2 and 1-3 have been reviewed. Perhaps the discrepancy is related to the fact that surface ownership and subsurface mineral ownership is not always the same. A quick review of our subsurface mineral ownership records showed 14,271 acres of ownership, much closer to the figure you mention. The BLM will look into this issue and correct any discrepancies found.

**Comment 105-2:** We ask that you review the amount of state acreage within the project area so as to have an accurate count.

**Response:** See Response to Comment 105-1.

**Comment 105-3:** Thank you for the opportunity to review this project.

**Response:** Thank you for your comment.

**Comment 105-4:** Outdated information provided in the analysis should be updated.

**Response:** The air quality analysis provided in the DEIS has been changed to reflect Wyoming DEQ concerns. Please see text changes to the air quality analysis in both Chapter 3 and Chapter 4 of the DEIS that are included in the Errata, Section 2 of this FEIS.

**Comment 105-5:** Outdated information provided in the DEIS should be updated.

**Response:** See response to comment 105-4.

**Comment 105-6:** Page 1-20, Table 1-6 Add Air Quality Division Actions to Table 1-6.

**Response:** Table 1-6 was be updated to describe Wyoming Department of Environmental Quality, Air (see Errata section).

**Comment 105-7:** Page 3-19, Table 3-8, the listing of WAAQS is incomplete.

**Response:** According to Cara Casten of WDEQ, the new PM 2.5 and O3 standards have not been implemented in Wyoming. Therefore the WDEQ is currently not requiring compliance demonstrations for these standards.

**Comment 105-8:** Page 3-19, Table 3-8. The Division notes that several background pollutant concentrations are outdated.

**Response:** The document was updated with the new background values.

**Comment 105-9:** Page 3-20, Paragraph 5 Specify the type of IMPROVE data.

**Response:** Document was revised in accordance with the comment.

**Comment 105-10:** Page 3-20 More current IMPROVE data have become available.

**Response:** Chapter 3 was revised to reflect the most current background data. Chapter 4 remained unchanged and impacts are still compared to the same background values as appropriate for the 1995 inventory date used for this study.

**Comment 105-11:** Page 3-21, Table 3-9. Refrain from using the term “baseline.”

**Response:** The term “baseline” was edited except when specifically referring to PSD.

**Comment 105-12:** Page 4-13 Specify the type and size of compressor engines assumed for the analysis.

**Response:** We appreciate the DEQ providing updated engine emissions data resulting from the application of the BACT process that were not available at the time of the analysis. Assumptions concerning potential compressor equipment were presented.

**Comment 105-13:** Page 4-22 Inconsistencies are noted between the DEIS and AQTR documents.

**Response:** A draft version of the AQTR document was inadvertently distributed to team members. The most current version of the AQTR document has been posted on the BLM website. Consistency between the documents has been verified. A revised AQTR will be released with the final EIS.

**Comment 105-14:** Page 4-25 Inconsistencies are noted between the DEIS and AQTR documents.

**Response:** Refer to Comment 105-13 Response.

**Comment 105-15:** Page 4-24 Explain why different visibility data sets were used in Chapter 3 and the analysis.

**Response:** In our opinion, the best available data for demonstrating existing visibility conditions and long term visibility trends within Chapter 3 is the 5 year rolling average IMPROVE aerosol data set.

Background visibility conditions consistent with a 1995 emissions inventory date were utilized for the analysis.

**Comment 105-16**: Page 4-27 Inconsistencies are noted between the DEIS and AQTR documents.

**Response:** Refer to Comment 105-13 Response.

**Comment 105-17:** Page 4-28 Inconsistencies are noted between the DEIS and AQTR documents.

**Response:** Refer to Comment 105-13 Response.

**Comment 105-18**: Page 4-29 Mitigation Measures

**Response:** Suggested text provided by the DEQ was incorporated into the revised text.

**Comment 105-19:** Page 4-29 NOx Mitigation – Delete the first bullet.

**Response:** Updated mitigation information was incorporated in the document.

**Comment 105-20:** Page 4-29 NOx Mitigation – third bullet.

**Response:** Updated mitigation information was incorporated in the document.

**Comment 105-21:** Page 4-30 Mitigation monitoring.

**Response:** The document has been revised to present the NOx tracking currently being conducted.

**Comment 105-22:** Page 5-6 Air Quality Division

**Response:** The document was revised as requested

**Comment 105-23:** Page 5-6 RFD emission scenarios.

**Response:** All results are based upon the moderate RFD emissions scenario. Discussions concerning the conservative RFD emissions scenario were previously removed from the final draft Technical Support Documents.

**Comment 105-24:** Page 5-10 Inconsistencies are noted between the DEIS and AQTR documents.

**Response:** Refer to Comment 105-13 Response.

**Comment 105-25:** Page 5-11 Inconsistencies are noted between the DEIS and AQTR documents.

**Response:** Refer to Comment 105-13 Response.

**Comment 105-26:** Page 5-13 Inconsistencies are noted between the DEIS and AQTR documents.

**Response:** Refer to Comment 105-13 Response.

**Comment 105-27:** AQTR Emission Inventory page 6 Seasonal weighting factors.

**Response:** Citation was added as requested.

**Comment 105-28:** AQTR Emission Inventory page 9 Specify the type and size of compressor engines.

**Response:** Refer to Comment 105-12 Response.

**Comment 105-29:** AQTR Sub-Grid Report page 3 WAAQS listing is incomplete.

**Response:** Refer to Comment 105-7 Response.

**Comment 105-30:** AQTR Sub-Grid Report page 3 Background concentrations are out of date.

**Response:** Refer to Comment 105-8 Response.

**Comment 105-31:** AQTR Sub-Grid Report page 8 Spelling error.

**Response:** Document corrected as suggested.

**Comment 105-32:** AQTR Sub-Grid Report page 9 Spelling error.

**Response:** Document corrected as suggested.

**Comment 105-33:** AQTR Sub-Grid Report page 18 Document assumptions.

**Response:** Entire HAPs analysis was updated utilizing current reference concentrations and cancer risks factors.

**Comment 105-35:** AQTR Near and Far Field Report page 2 Change “Chapter” to “Section”

**Response:** Text corrected as requested.

**Comment 105-36**: AQTR Near and Far Field Report page 30 Spelling error.

**Response:** Text corrected as requested.

**Comment 105-37:** AQTR Near and Far Field Report page 32 Spelling error.

**Response:** Text corrected as requested.

**Comment 105-38:** AQTR Near and Far Field Report page 80 Table 5-3.

**Response:** Table expanded as requested.

**Comment 105-39:** AQTR Near and Far Field Report page 93 Inconsistencies are noted between the DEIS and AQTR documents.

**Response:** Refer to Comment 105-13 Response.

**Comment 105-40:** AQTR Near and Far Field Report page 95 Inconsistencies are noted between the DEIS and AQTR documents.

**Response:** Refer to Comment 105-13 Response.

**Comment 105-41:** AQTR Near and Far Field Report page 96 Inconsistencies are noted between the DEIS and AQTR documents.

**Response:** Refer to Comment 105-13 Response.

**Comment 105-42:** AQTR Near and Far Field Report page 98 Inconsistencies are noted between the DEIS and AQTR documents.

**Response:** Refer to Comment 105-13 Response.

**Comment 105-43:** AQTR Near and Far Field Report page 99 Inconsistencies are noted between the DEIS and AQTR documents.

**Response:** Refer to Comment 105-13 Response.

**Comment 105-44:** AQTR Near and Far Field Report page 100 Inconsistencies are noted between the DEIS and AQTR documents.

**Response:** Refer to Comment 105-13 Response.

**Comment 105-45:** Page 5-11 Inconsistencies are noted between the DEIS and AQTR documents.

**Response:** Refer to Comment 105-13 Response.

**COMMENT LETTER 106: KENNETH CRECKEL**

**Response:** Thank you for your comment.

**COMMENT LETTER 107: BRYAN WYBERG**

**Response:** Thank you for your comment.

**COMMENT LETTER 123: SHEILA BREMER, EOG RESOURCES**

**Comment 123-2:** Impacts reported for areas located in Colorado should be omitted.

**Response:** For short periods of time, the winds may blow from the project area towards Colorado. Therefore the inclusion of the potential impacts within Colorado is appropriate for this analysis.

**Comment 123-3:** Mitigation measures discussed in Section 4.2.5 are redundant.

**Response:** It is appropriate to address all air quality related mitigation measures in Section 4.2.5.

**Comment 123-4:** Some mitigation measures may be impractical.

**Response:** It is not necessary for mitigation measures to be practical under all potential circumstances.

**Comment 123-5:** Some mitigation measures would require controls below levels set by WDEQ.

**Response:** BACT is a process, not a fixed emission limit. Appropriate controls and resulting emission limits will be determined by the WDEQ during the permitting process.

**Comment 123-6:** It is not reasonable for the BLM to require a NOx emissions offset program for the development of the project.

**Response:** An NOx offset program under the control of the BLM was never stipulated in the document.

**Comment 123-7:** EOG supports the development of an air monitoring program.

**Response:** EOG's support of ongoing and future monitoring/tracking programs is appreciated.

**Comment 123-12:** The proposed mitigation to disallow the construction of permanent aboveground structures within 300 meters or less…. of any raptor nest page 4-72 unnecessarily prevents development near inactive or abandoned nests.

**Response:** The BLM feels in some cases in may be necessary to require this mitigation to protect raptors who use, abandon, and re-use nests in their life history. This includes birds such as ferruginous hawks, who have also been known to build nests on top of existing structures within their habitat.

**Comment 123-13:** Mitigation measures proposed in addition to the ones listed in Section 2.5.2.11 must be based on documented scientific evidence that is current and appropriate to the area being analyze. The FFNG DEIS should include citation to these studies within the document to support the need for additional restrictions. More detail is needed to support the validity of these proposed additional mitigations.

**Response:** The reason additional potential mitigation measures in Section 4.7.5 are proposed is detailed in Chapter 4, particularly Section 4.7.6. The BLM feels there is adequate support to include these measures in the DFPA process and Record of Decision when it is made.

**Comment 123-14:** Limiting the number of wells locations in areas of high wildlife density is effectively a mandate to directionally drill from a fewer number of available locations. For reasons adequately described in the DFNGF DEIS in Section 2.6.2, the use of alternative drilling technologies should not be presumed to be feasible on anything but a well-specific basis.

**Response:** BLM agrees with this assertion.

**Comment 123-14a:** An operator's inability to extract minerals from its leases is a denial of the rights associated with lease acquisition and could be construed as a taking. BLM Instruction Memorandum 92-67 clarifies 43 CFR 3101.1-2, which provides for a 200 meter general standard within which surface-use restrictions must fall. For any surface use restriction that exceeds the 200-meter/60 day rule, the BLM bears the burden of establishing that the restriction is justified.

**Response:** Your comment is noted.

**Comment 123-16.** Mitigation measures proposed in addition to the ones listed in Section 2.5.2.11 must be based on documented scientific evidence that is current and appropriate to the Project Area. The DFNGF DEIS should include citations to these studies within the document to support the need for additional restrictions. More detail is needed to support the validity of these proposed additional mitigations.

**Response:** Please refer to our response (Comment 123-13) to your earlier comment regarding mitigation.

**COMMENT LETTER 124: ENVIRONMENTAL PROTECTION AGENCY**

**Comment 124-1:** Pg. 4-29 Provide a Cost/Benefit analysis for mitigation measures.

**Response:** A summary mitigation table including costs and benefits was incorporated into the final document.

**Comment 124-2:** Pg. 5-6 Update cumulative far field impacts with results from the Jonah Infield DEIS.

**Response:** The timing for the release of the Jonah Infill EIS will not allow for its incorporation into the Desolation Flats EIS. The Desolation Flats analysis represents the most current information available for southwestern Wyoming.

**Comment 124-3:** EPA encourages the BLM to work with the State of WY in the development of a plan to reduce potential impacts to regional haze.

**Response:** The State of Wyoming, Department of Environmental Quality, Division of Air Quality has prepared a 2003 Review Report on Wyoming's Long Term Strategy for Visibility

Protection in Class I Areas. The Board and Air Quality Division invited the public, industry, and Federal Land Managers to provide comment on visibility protection from reasonably attributable visibility impairment in Class I Areas. While outside the scope of this document, the BLM is committed to avoiding visibility impairment in all areas, including Class I areas.

**Comment 124-4:** Pg. 4-8 EPA would prefer to see a "most likely" scenario rather than a "worst case" scenario.EPA's preference is noted. However, it is not feasible at this time to remodel for a "most likely" scenario.

**Response:** EPA's preference is noted. In this instance, the use of the term "worst case" refers to the analysis of Alternative A, for which the greatest impacts would occur. Impacts that may result from the implementation of Proposed Action or the No Action alternative would be less.

**Comment 124-5:** Pg. 4-11 State the rate of water application necessary to achieve a 50% dust control efficiency.

**Response:** A water application rate was calculated and presented in the Errata section, page 27. A daily application of 0.02 gallons/yd$^2$ should provide a fugitive dust control efficiency of 50%..

**Comment 124-6**: Pg. 4-14 State the distance to maximum predicted impacts.

**Response:** The referenced table was revised to include the distance to maximum impact for each pollutant and averaging time.

**Comment 124-7**: Pg 4-18 Provide EPA citation for the exposure scenario.

**Response:** Entire HAPs analysis was updated utilizing current reference concentrations and cancer risks factors. The most likely exposure scenario was removed from the analysis.

**Comment 124-8:** Pg. 4-20 State averaging times for Range of State Acceptable Concentration Limits.

**Response:** Entire HAPs analysis was updated utilizing current reference concentrations and cancer risks factors. Appropriate averaging times are presented for the new significance criteria.

**Comment 124-9:** Recommend revising risk numbers in Table 4-10 to whole numbers.

**Response:** Refer to Errata for an updated Table 4-10.

**Comment 124-10:** Pg. 4-24 Dinosaur NM background concentrations.

**Response:** The statement was removed from the final document.

**COMMENT LETTER 125: KNIFFY HAMILTON, USDA FOREST SERVICE**

**Response:** See responses to Comment Letter 146, a duplicate of Comment Letter 125.

**COMMENT LETTER 126: F. ERLINE HITTEL**

**Response:** Thank you for your comment.

**COMMENT LETTER 127: RENEE C. TAYLOR, TRUE OIL LLC**

**Comment 127-1:** The potential impacts to recreation and visual resources from the proposed activity are considered in the document to be significant. Yet, in the document no quantitative information is provided relative to the level of documented recreational activity that takes place in the study area. We recognize the importance of the area to big game hunters but fail to see the significance criteria relative to a reduced sense of isolation or visual change. The mere fact that visitors to the Haystacks or Adobe Town might be able to look out of the WSA and see a gas field does not make the gas field a significant impact to the users of the WSA.

**Response:** The current use levels and known recreational uses within the DFPA, Adobe Town WSA and Monument Valley Management Area are detailed on page 3-75. The DEIS states there in part:

> "Lands with wilderness qualities, whether existing wilderness areas, recommended and managed as WSA's, or lands under study for wilderness consideration, typically attract recreatists in search of solitude and isolation."

In chapter 4, page 4-91 the DEIS states:

> "Project related disturbances that adversely impact the characteristic landscape could also contribute to a decline in the recreational experience for these users. The recreation experience for those continuing to use the area would be less satisfying than use under the pre-disturbance conditions described in Chapter 3."

**Comment 127-1a:** The level of recreational use in the area is variously described in the document as "low" and a few paragraphs later as "moderate". Which is it and what are the relative differences between the two.

**Response:** Thank you for pointing this discrepancy out. The final EIS has been corrected to show moderate recreational use in both cases. Signs are not part of the DFPA's proposed action, or mitigations and are not planned for use in this project.

**Comment 127-2:** We are concerned at the potential cost of implementing the wildlife monitoring plan (Appendix H). While a relatively low level of development will require a "reasonable" level of monitoring, the intensity of monitoring relative to development at 4 well per section seems excessive. No information is provided regarding how these costs might be allocated amongst the various agencies and operators with interest in the area.

**Response:** Page H-2 of the Wildlife Monitoring Plan, in 2.1 "Annual Reports and Meetings" second paragraph states in part:

> "Decisions regarding annual Operator-specific financing and personnel requirements will be made at these meetings. A protocol regarding how to accommodate previously unidentified development sites will also be determined during the annual meeting. Final decisions will be made by the BLM based on the input from the Review Team and all affected parties."

**Comment 127-2a:** If all the provisions of Appendix H are implemented BLM will be overwhelmed with data. We suggest the BLM adopt, as part of its plan, the identification of key indicators by which system changes can be monitored. For each key indicator, the Review Team should identify triggers at which time, if exceeded, additional investigations would occur.

**Response:** Based on the extent of oil and gas development proposals coming into the Rawlins Field Office it is possible the amount of wildlife monitoring needed will increase, and the corresponding data generated will increase. The use of "key triggers" as you propose can be evaluated by the Review Team discussed in the Wildlife Appendix, and utilized if the Team decides to do so. Thank you for your suggestion.

**Comment 127-2b:** The information gathered through out the life of the project will provide much needed data regarding the affects of oil and gas development and production on wildlife. We urge the BLM to maintain consistency with existing data collection protocols and surveys guidelines so that at the end of the day the data are comparable.

**Response:** BLM agrees with this comment and will try to achieve this in the DFPA.

**Comment 127-3:** As written it appears that annual surveys will be required to determine if potential habitat has become occupied habitat and if it is additional constraints will be placed on that years development activities.

**Response**: As detailed on page H-10, at 2.2.3.4, Mountain Plover surveys will be conducted each field season to identify occupied habitat within the DFPA.

**Comment 127-4:** This stipulation looks like a mapping requirement leading to a two mile NSO. If this level of information is collected and areas within the two mile radius are found not to contain suitable nesting habitat will they be dropped from the spring/summer protection standard or is this another stipulation that will not be amended?

**Response:** The DF EIS process does not propose to impose any additional stipulations to leases within the DFPA. Mitigations proposed include greater sage grouse activities and/or constraints that will reduce or eliminate DFPA impacts upon sage grouse habitat and populations. Mitigations proposed include prohibition of surface disturbance within ¼ mile of a lek, no surface disturbance within two miles of an active or known greater sage-grouse lek between March 1 and June 30th, and no surface disturbance within identified patches of greater sage grouse severe winter relief habitat.

**Comment 127-5:** The herd is over objective. The range/vegetative resource has many management pressures from many directions including, but certainly not limited to, grazing by big game species, livestock and wild horses. Oil and gas activities further constrain the vegetative resource, slowly replacing it over time. The BLM is mandated with multiple use management of the public lands. We urge the BLM to reduce the number of horses to the population objective and allow the other legitimate uses of the resource be permitted.

**Response:** While wild horse management is outside the scope of the DFPA for consideration, the BLM acknowledges wild horse herd levels have been above herd objective levels and has taken action recently to deal with this problem.

**COMMENT LETTER 128: ROSE MARIE ARIDAS**

**Comment 128-1a**: My group looked and looked and couldn't find mountain plovers, hence they need to be protected and allowed to produce.

**Response:** Chapter 3 of the DFPA DEIS, page 3-67 and 3-68 described mountain plover presence and habitat within the DFPA. Figure 3-16 provides a map of large mountain plover habitat and areas of recorded sightings of the bird. Numerous mitigations are provided for in the document, and can be found in Chapter 2, especially at page 2-38 and 2-39, in Chapter 4 especially at 4-79 and 4-80, and in the Wildlife Appendix, pages H-37 and H-38. In Chapter 4, page 4-76, the DEIS states in part:

> "Given the implementation of mitigation measures in Sections 2.5.2.11.2 and 4.8.1.4, no adverse effects to mountain plovers are expected"

**Comment 128-1b**: Prairie dog colonies are essential to black-footed ferrets; why are we breeding them in captivity as a G&F program if we do development which will destroy the habitat of their prey?

**Response:** The DFPA DEIS states for the proposed action in Chapter 4, especially at 4-82 in part:

> "The anticipated disturbance of prairie dog colonies is expected to be low, and no significant impacts to white-tailed prairie dogs are expected."

Also in Chapter 4, on page 4-74 the DEIS states:

> "No ground disturbing activities would occur within a colony if a ferret is found. Through these measures, the Proposed Action is not expected to adversely affect the black-footed ferret."

The BLM does not anticipate the destruction of prairie dog habitats under this proposal.

**Comment 128-1c**: When we were near a drilling operation, we saw that the earthen dam used to hold back the waste water was leaching into the creek.

**Response:** There are no year round creeks (DEIS, page 3-34) in the DFPA. There are ephemeral drainages within the DFPA that flow some water during the spring melt and following storm events.

**Comment 128-1d**: I ask that "no surface occupancy" be part of the procedure for extracting oil and gas. If it need be done at all, let it be as minimally intrusive as possible. Do not disrupt the natural environment and habitat of native species.

**Response:** No surface occupancy is a possibility where impacts on wildlife and their habitats are serious enough to require this restriction. It is the experience of the BLM that this type of constraint is seldom needed to maintain, or attain minimally intrusive impacts within an oil and gas development area, such as the DFPA.

**Comment 128-1e**: Mandate directional drilling so drilling works around, not through, sensitive areas.

**Response:** Mandating directional drilling is an option that was considered but eliminated from detailed study. Please refer to the Section titled "Alternatives Considered but Eliminated From Detailed Study" for details on why that decision was made. Additional insight to directional

drilling can be found on the internet at: http://www.wy.blm.gov/nepa/rsfodocs/vermbasin/VBPA-well-architecture-letter.pdf. The BLM anticipates directional drilling in one form or another will occur with the DFPA, but doesn't know specifically where at this time.

**Comment 128-1f**: We visited the Adobe Town Wilderness Study area; the idea that this phenomenally beautiful and rugged area would be impacted sickens.

**Response:** The Adobe Town WSA is outside of the DFPA. The DFPA DEIS states on page 4-95:

> "In addition, site disturbance and facilities would be visible from other portions of the MVMA and adjacent Adobe Town WSA, diminishing the quality of the visual experience for potential future users of these areas."

**Comment 128-1g**: Please be forthcoming about the plans for where the wells and the roads will be so that we who care can continue to have input.

**Response:** Following the issuance of the Record of Decision (ROD) for the DFPA EIS process, as site specific Operator proposals for development come forward they will be analyzed under the National Environmental Policy Act in EAs tiered to the DFPA ROD, and locations disclosed to the public for their information. Due to the uncertainties of geology, economics, surface conditions and other variables and unknowns the specific location of future developments cannot be predicted with sufficient accuracy to satisfy the NEPA provisions at this time.

### COMMENT LETTER 129: JASON AND LINDA LILLEGRAVEN

**Response:** Thank you for your comment.

### COMMENT LETTER 130: KENNY BECKER

**Response:** Thank you for your comment.

### COMMENT LETTER 131: BECKY MILLER

**Response:** Thank you for your comment.

### COMMENT LETTER 132: DEENA MCMULLEN, INDEPENDENT PETROLEUM ASSOCIATION OF MOUNTAIN STATES

**Comment 132-1:** The BLM must follow the President's Executive Order 13212 (2001) in completion of the Desolation Flats EIS. In the Executive Order, the President directs federal agencies to evaluate current programs, policies and rules and to reduce barriers to America's energy self-sufficiency. The EIS should reflect federal law and policy and the nation's need for secure sources of domestic energy.

**Response:** BLM agrees with your assertion, and believes the DFPA EIS moves towards those goals.

**Comment 132-1a:** The EIS should acknowledge that industry can develop the resources in an environmentally friendly manner while providing the nation with an abundant source of clean affordable energy.

**Response:** The DFPA EIS discloses the environmental effects of the proposed action and alternatives, actions and mitigations to be used to reduce or eliminate adverse environmental impacts and the consequences associated.

**Comment 132-1b:** Furthermore, the BLM has a Congressionally mandated multiple-use mission, which must be honored and not compromised by the single-use land management objectives promoted by certain interest groups.

**Response:** The BLM will conform with the mandates and direction found in the Federal Land Policy and Management Act.

**Comment 132-2:** During preparation of the Desolation Flats EIS, drilling activities should be allowed to proceed in accordance with regulations of the Council on Environmental Quality, particularly where the well(s) will not cause any adverse impact to the environment or will not limit the choice of reasonable alternatives.

**Response:** Interim drilling proposals may be allowed during the DFPA EIS preparation process as detailed in the "Interim Drilling Policy" for DFPA.

**Comment 132-3:** A decision to remove further lands from the constantly diminishing multiple-use land base would have a detrimental impact on local economic opportunities and welfare. Consequently, IPAMS would strongly object to a no-lease or no-surface occupancy stipulation decision for areas allocated to semi-primitive recreation.

**Response:** The DFPA EIS does not propose to change the land use status of lands within the DFPA. No changes to lease stipulations are proposed or envisioned in the DFPA.

**Comment 132-4:** BLM must not make assumptions that industry can directionally drill in any situation. Increased costs couple with increased mechanical challenges may prevent directional project from ever being drilled and thus related revenues not realized by the state of Wyoming and the country.

**Response:** BLM has not made that assumption. As detailed in Chapter 2, pages 2-14 to page 2-17 directional drilling is a tool available to the Operators when desired or needed. Surface and sub-surface issues will affect the development of actions tiered to the DFPA EIS, and the BLM will evaluate those proposals as they come forward.

**Comment 132-5:** When developing management practices and wildlife stipulations, the BLM should use sound science to determine wildlife patterns and whether restrictions are necessary. Too often, areas are closed or severely restricted based on faulty evidence. If no sound science exists that demonstrates the presence of a species in an area, the BLM should examine the area before making decision that will govern land management for the next 10 – 20 years.

**Response:** Under the Great Divide Resource Management Plan, additional wildlife restrictions may be added to a lease when new issues arise. Likewise, stipulations may be

removed when found to be without sound basis or need. The DFPA EIS process does not propose any stipulation modifications or changes.

**Comment 132-6:** BLM should not impose regulations that exceed acceptable standards for the State of Wyoming.

**Response:** There are no regulations proposed by the BLM for this project, at this time.

**Comment 132-7:** IPAMS encourages the BLM to communicate early and often with cooperating agencies to prevent unforeseen delays at the eleventh hour. Cooperating with federal, state, and local agencies in the early stages of preparation of the document will help the BLM produce a document that is thorough in its analysis.

**Response:** The BLM concurs with your recommendation.

**Comment 132-8:** IPAMS urges the BLM to move expeditiously to complete this EIS, avoiding all unnecessary delays, so that the nation, state, and county can continue to reap the benefits of multiple use provided in this area.

**Response:** Thank you for your comment.

**COMMENT LETTER 133: TODD ENNENGA, DEVON ENERGY PRODUCTION COMPANY, L.P.**

**Comment 133-1:** Current BLM wildlife stipulations are in effect over several months of the year, creating a very limited window for Devon Energy to drill, complete, and/or recomplete wells. These stipulations reduce our ability to efficiently produce the resource, causing unnecessary capital tie-ups and inefficient use of reserve potential.

**Response:** As detailed in 43 C.F.R. 3101.1-2, a lessee shall have the right to use so much of the leased lands as is necessary to explore for, drill for, mine, extract, remove and dispose of all the leased resource in a leasehold subject to: Stipulations attached to the lease; restrictions deriving from specific, non-discretionary statutes; and such reasonable measures as may be required by the authorized officer to minimize adverse impacts to other resource values, land uses or users not addressed in the lease stipulations at the time operations are proposed. To the extent consistent with lease rights granted, such reasonable measures may include, but are not limited to, modification of siting or design facilities, timing of operations, and specification of interim and final reclamation measures. Exceptions may be requested, and may be approved. Generally in the Rawlins Field Office timing constraints arise from the need to protect threatened, endangered, or sensitive species during crucial periods in their life cycle, including winter stress periods and mating/nesting season for birds. Constraints such as timing stipulations are sometimes required to sustain healthy wildlife populations.

**Comment 133-1a:** Devon feels it is necessary to discuss other types of mitigation, which cold be utilized at the time of oil and gas drilling. Proper implementation of these mitigations procedures allows for oil and gas activities to be compatible with other resource uses.

**Response:** While Chapter 2, at part 2.5.2.11 discusses mitigations that can be used to reduce the impacts of oil and gas development in the DFPA, it is not an exclusive list. If innovative and

better techniques, technology, or science develops that allows for other mitigations, the BLM will certainly consider them when they are proposed.

**Comment 133-2:** The technology associated with directional drilling should not be considered a standard practice or stipulation for production in the preparation of the RMP.

**Response:** An alternative that would have required direction drilling was considered but eliminated from detailed study. Directional drilling may be approved when proposed based on geologic, biologic, or other factors that may cause such a proposal to come forward.

**Comment 133-3:** The Wyoming Oil and Gas Commissions current requirements for spacing of well pads should continue to be utilized by the BLM as an effective and consistent approach to minimizing surface disturbance.

**Response:** Approved well spacing will be consistent with the Great Divide (Rawlins) RMP, and tiered to the Desolation Flats project area (DFPA) record of decision (ROD).

**Comment 133-4:** Valid existing lease rights cannot be changed by a new plan. Voluntary compliance to the new plan may be sought from lessees if activities are initiated. Nevertheless, BLM needs to specify in the planning documents if and how valid existing lease rights could be impacted by the new leasing decisions. Specifically, potential conditions of approval for operators and other changes should be identified.

**Response:** The DF EIS does not propose to modify or alter lease rights within the DFPA.

**Comment 133-5:** The establishment of new Wilderness Study Area should be curtailed during the preparation of the Environmental Impact Statement. This ensures that the decision-making process will remain consistent. Additionally, if the BLM allows new WSA's to be established or the expansion of existing WSA's to occur, current lease rights could be violated triggering costly litigation and delays in the timeline.

**Response:** Chapter 2, part 2.6 "Alternatives Considered But Eliminated From Detailed Study" details an expanded wilderness alternative that was evaluated. Creation of wilderness study areas in the DFPA is outside the scope of the DFPA EIS process.

**Comment 133-6:** The requirement to prepare a Statement of Adverse Energy Impacts in the event opportunities to develop oil & gas are curtailed as a result of RMP revisions.

**Response:** Curtailment of oil and gas development at the RMP analysis level is outside the scope of the DFPA EIS process.

**Comment 133-7:** Currently the BLM is required to conduct certain monitoring activities. Devon feels that there is opportunity to integrate a broader approach to monitoring so that the BLM can determine when activities are approaching the management threshold set forth in the plan. This will allow the BLM to avoid making knee jerk reactions to halt all activity pending completion of a new EIS.

**Response:** Oil and Gas well disturbance levels were up dated for the FEIS in January of 2004. The update showed that the DFPA proposed action and Alternative A will not exceed the

reasonably foreseeable development acreage analyzed for the Great Divide Resource Management Plan.

**Comment 133-7a:** We recommend the BLM look into alternatives to expand and implement integrated monitoring of resources. Additional funding for expanded monitoring should be addressed perhaps by using MMS royalties or other funding sources.

**Response:** As the extent of oil and gas development grows in the Rawlins Field Office, we have observed that traditional monitoring processes may need to be adaptively managed to allow more effective and less time consuming and costly monitoring. The use of MMS royalties for funding monitoring surveys is outside the scope of the DFPA EIS process.

**COMMENT LETTER 145: JODI L. BUSH, U.S. FISH AND WILDLIFE SERVICE**

**Comment 145-2:** Although the DEIS addresses measures to minimize impacts of project development on listed species, we believe the Bureau should also seize the opportunity to incorporate measures for species conservation and recovery into the planning document for this project.

**Response:** Within the scope of the Desolation Flats project area (DFPA) EIS process, the BLM believes it is doing as much as it can to attain this goal. Real challenges remain in the restoration of TE&S species both at the DFPA level and at larger scales.

**Comment 145-3:** Appendix I of the DEIS is the Biological Assessment for this project. However, the U.S. Fish and Wildlife Service (Service) has not received a request from the Bureau to initiate consultation, either formal or informal, under section 7 of the Act. Since there will be depletions to the Colorado River system, formal consultation for species affected will be necessary. We encourage the Bureau to initiate consultation on all listed and proposed species potentially affected by the project immediately so that delays in project implementation can be avoided.

**Response:** Formal consultation with the U.S. Fish and Wildlife Service was initiated in January of 2004 by the BLM. Fish & Wildlife Service concurrence, dated Mar 26, 2004 was received by the BLM Rawlins Field Office April 1, 2004.

**Comment 145-4:** The Bureau requires a 200 meter buffer from all active mountain plover nests for all project-associated development. However, since release of the DEIS for the Continental Divide/Greater Wamsutter II project, the Service, through consultation with Dr. Fritz Knopf, has determined this buffer be increased to 0.25 mile (app. 400 meters).

**Response:** In the DFPA DEIS, on page 4-76 it is stated:

> "Given the implementation of mitigation measures in Sections 2.5.2.11.2 and 4.8.1.4, no adverse effects to mountain plovers are expected."

BLM notes that in addition to the many mitigations proposed, much of the potential impacts to mountain plover will be avoided in the DFPA by siting facilities, roads, and well pads outside of known occupied mountain plover habitat to the extent feasible.

**Comment 145-6:** Please be advised that the greater sage-grouse habitat management guidelines referred to in this section (Braun et al. 1977) are outdated, and have been replaced by Connelly, et al, 2000.

**Response:** BLM acknowledges Connelly has replaced Braun. In addition, we understand new guidelines for managing greater sage-grouse are forth coming from the BLM Wyoming State Office. BLM will comply with whatever guidance is in effect when site specific proposals come forward for projects under Desolation Flats EIS and Record of Decision.

**Comment145-6a:** Therefore, the standard 2-mile range buffer around lek sites (referred to in this and all subsequent wildlife sections) may be insufficient to protect nesting hens.

**Response:** The BLM recognizes that greater sage-grouse nest both inside and outside of 2 miles from leks. At this time the BLM manages habitat using NSO's within ¼ mile of a lek, timing restrictions during strutting, nesting, and crucial winter time periods.

**Comment145-7:** However the boundaries of prairie dog colonies frequently shift, and therefore mapping completed 3 to 4 years prior to project implementation may no longer be accurate. We request that the mapping completed in 2000 be used as a guideline only for project planning.

**Response:** The BLM concurs with this assertion. All proposals for development receive a site visit where issues such as prairie dog town boundaries and facility siting are resolved.

**Comment 145-8:** The DEIS identifies the yellow-billed cuckoo as a sensitive species, but does not acknowledge that the western populations of this species is a candidate under the Act. While the candidate status does not confer any protection to the cuckoo under the Act, it does identify the cuckoo as a species for which listing is warranted, but precluded by higher priority actions at this time. We believe the Bureau should acknowledge the status of this species, and use your authority under Section 7(a) (1) Act to further the conservation and recovery of the cuckoo.

**Response:** The DFPA DEIS, on page 4-84, in analyzing the effects of the proposed action, states:

> "In Wyoming, the yellow-billed cuckoo prefers cottonwood stands for foraging and willow thickets for nesting (WYNDD 2001). Yellow-billed cuckoos have not been observed on or near the project area (WGFD 2000a) and they are not expected to occur due to a lack of suitable habitat. No adverse impacts to this species are expected from implementation of the proposed action."

Within the scope of the DFPA, the BLM does not have any options to further the recovery of the cuckoo in our opinion.

**Comment 145-9:** No supporting information is provided regarding the conclusion that the midget-faded rattlesnake is unlikely to occur on the project area. The Bureau should provide the supporting information for this conclusion. If the midget-faded rattlesnake may occur on the project area, protective measures for this species should be implemented.

**Response:** The DFPA, on page 3-71 under the title "Reptiles" states that the midget-faded rattlesnake may potentially be found within the DFPA, but the likelihood is very low. In Chapter 4, page 4-85 for the proposed action the DEIS further states in part:

> "The documented distribution of the midget-faded rattlesnake in Wyoming is west of the DFPA. However, the eastern extent of its range is not well known and the snake could potentially occur in suitable habitat on the project area. Potential impacts to midget-faded rattlesnakes habitat would likely be low because it is difficult to construct well sites and roads in rock outcropping areas, therefore those areas would likely be avoided. Implementation of the Proposed Action is not expected to significantly impact midget-faded rattlesnakes if present."

Although the midget-faded rattlesnake is not known to occur in the DFPA, it may occur. Disturbance activities are expected to avoid habitats used by the snake, if it should be present. BLM believes there is very little to no risk to this species from this project, and protective measures are not needed.

**Comment 145-11:** However, the DEIS does not analyze indirect effects of project development on the greater sage-grouse, or the impacts previously observed on other energy development projects, such as habitat fragmentation, population declines, lek abandonment, failure of hens to initiate nests, and loss of productivity (Braun, 1998; Connelly et al, 2000, Lyon, 2000). These impacts have been demonstrated to occur, even when mitigative measures, such as those described in the DEIS, are implemented. The Bureau should include these potential impacts in the analysis, and if still applicable, provide supporting information for the current no "significant" impact conclusion.

**Response:** The DEIS analyzes "indirect" effects as direct effects. The effects of the proposed action are detailed in Chapter 4, part 4.7.3.1.4 "Upland Game Birds". At 4.7.2 "Impact Significance Criteria" the DEIS indicates that disruption of greater sage-grouse , or raptor breeding or nesting activities to the extent that reproductive success is threatened or damaged would be a significant effect. Other criteria are detailed also that apply. The DEIS analyzes the impacts of DFPA energy development, but the impacts of other energy developments outside of the DFPA is outside the scope of the document. Habitat fragmentation, population declines, lek abandonment, failure to initiate nests, and loss of productivity are not effects expected from the DFPA, they are results that could occur if mitigations and avoidance goals are not implemented as necessary. In Chapter 4, page 4-67first paragraph the DEIS states:

> "Through seasonal closures, reclamation, avoidance, and mitigation measures, significant impacts to the greater sage-grouse population would not be expected to occur as a result of implementation of the proposed action"

Effects for Alternate A are discussed page 4-70, part 4.7.3.2.3 "Upland Game Birds" under "Greater Sage-Grouse".

**Comment 145-12:** The second paragraph of this section discusses measures to minimize potential impacts to nesting raptors by protecting both active and inactive nests. A no surface occupancy for permanent structures is identified to protect inactive nests that may serve as an alternate nesting location. However, no such stipulation is identified for active nests.

**Response:** Chapter 4, page 4-72, part 4.7.5 "Additional Mitigation Measures", sixth bullet down states:

> "No permanent above-ground structures would be constructed within 300m or less, depending upon species and/or line of sight, of any (emphasis added) raptor nest, on a site specific basis."

**Comment 145-12a:** If activities within this radius (0.5-1mile) of an active nest might cause abandonment, or reduce productivity, than the 300M (<0.25 mile) no surface occupancy around inactive nests will not be sufficient to protect these nests should they be used in the future.

**Response:** Seasonal disturbance mitigations, such as the mitigation listed in Chapter 2, page 2-38, seventh bullet down under "Wildlife" restrict construction and other disturbance activities in the proximity of an active raptor nest. No permanent surface structures are allowed within 300m of any raptor nest. If a raptor nest should become active within the nesting season, construction activities would be prohibited at the site during the restriction season. In the case of operational facilities, such as well pads, compressors et cetera, production operations would continue during the nesting season, just like they did when the bird occupied the nest.

**Comment 145-12b:** On the same page the DEIS states that all new project related roads would be closed to public use near active raptor nests to "offset" the potential impacts of increased traffic on nest success and productivity. Given the levels of project-related traffic identified in the DEIS, Table 2-3, page 2-31) restricting only public use of new roads may be insufficient to protect these birds. We request the Bureau consider avoiding road construction near active raptor nests thereby avoiding the potential conflict altogether.

**Response:** We were unable to find the text you refer to on page 4-67. However on page 4-68 the DEIS states in the second paragraph:

> "The creation of new roads would increase public access to areas within the project area. As use of the project area by both workers and recreationists increases, the potential for encounters between raptors and humans would increase and could result in increased disturbance to nests and foraging areas. Closure of road located near active raptor nests to public vehicle use would offset this potential impact."

On page 4-72, 4.7.5 "Additional Mitigation Measures" the 3rd bullet down states:

> "Roads located in big game crucial winter range may be closed, on a site specific basis, to public use from November 15-April 30 to minimize disturbance."

The BLM's intent with these statements was to describe some management alternatives to full open vehicle access within the DFPA that could be considered when sensitive resources may experience adverse impacts from vehicles and disturbance. Restricting use of roads is an option when adverse impacts are observed, or expected to occur. The range of alternatives is from fully open to everyone to completely shut to everyone, and everything in-between. BLM is not aware of areas that would require restrictions on use at this time, but wants to be sure those tools are available if and when needed. The exact terms of road use restrictions would vary based on the specifics of the situation.

**Comment 145-13:** Page 4-68, Section 4.7.3.1.6 Combination of Wildlife Concerns: The DEIS discusses the numbers of potential wildlife concerns by map locations (sections). However, the purpose of this discussion is not identified, nor is it clear how these results will be used by the Bureau for project planning and minimization of potential impacts to wildlife. The Bureau should clarify how this information will be used.

**Response:** Section 4.7.5 "Additional Mitigation Measures" in bullets 1, 2, 4, and 5 list additional mitigation measures that may be used based on the impacts and concerns detailed on page 4-68 "Combination of Wildlife Concerns". That is the purpose of the discussion on page 4-68.

**Comment 145-14**: However, the mitigation measures for both the active raptor nests and mountain plover are limited to seasonal restriction. No mitigation measures are identified solely for white-tailed prairie dogs.

**Response**: In Chapter 2, 2.5.2.11 "Project Wide Mitigation Measures, the "Wildlife" section (page 2-39) list 5 mitigations related to prairie dogs and black-footed ferrets. Included in these mitigations are statements that well pads and disturbance would be located outside of prairie dog colonies where feasible. Should black-footed ferrets be found in a prairie dog complex located within the project area, impact to the species or its habitats would be completely avoided, and all previously authorized project-related activities on-going in the prairie dog complex would be suspended immediately. In addition, if disturbance of prairie dog colonies located within complexes that contain potential black-footed ferret habitat can not be avoided, black footed ferret surveys would be conducted according to FWS guidelines.

**Comment 145-15:** The Service has determined that any depletion in the Colorado River system may adversely affect these species.

**Response:** Please refer to our response to comment 145-3.

**Comment 145-16:** Therefore, restricting traffic speed and volume only until July 10 may not provide adequate protection for birds foraging along roads. We strongly encourage the Bureau to implement this measure throughout the entire period mountain plovers are present on their breeding range (April 10 until late September.)

**Response:** The DEIS, in Chapter 4, part 4.8.1.2 for the proposed action states in part:

> "Given the implementation of mitigation measures in Sections 2.5.2.11.2 and 4.8.1.4, no adverse effects to mountain plovers are expected."

The BLM believes mitigation measures as written are adequate.

**Comment 145-17:** Page 5-16, Section 5.3.7, Wildlife: The DEIS states that additional mitigation measures may be implemented if monitoring indicate there will be "significant" cumulative effects as a result of project implementation. However, the DEIS contains no provisions for adaptive management.

**Response:** Implementing additional mitigation measures if monitoring indicates there will be significant cumulative effects is adaptive monitoring.

**Comment 145-17a:** However, the wildlife monitoring plan (Appendix H) does not assess cumulative effect for threatened and endangered species.

**Response:** BLM agrees with this assertion. Cumulative effects for threatened and endangered species are detailed in Chapter 5 "Cumulative Impacts Analysis", part 5.3.7 "Wildlife", section 5.3.8 "Special Status Plants, Wildlife, and Fish Species".

**Comment 145-17b:** If the monitoring plan is to be used for assessing cumulative impacts, it should be modified accordingly.

**Response:** The monitoring plan, as detailed in Appendix H, is designed to allow for the BLM, working in concert with other agencies, such as the US Fish and Wildlife Service, Wyoming Game and Fish Department, Project Operators and others to monitor, assess and adaptively

manage mitigations. Monitoring is not limited as to which effects it will look at. Cumulative impacts are among those that Appendix H will be monitor.

**Comment 145-18:** Page 5-19, Section 5.3.7.3, Greater Sage-grouse

**Response:** Effects, including indirect and direct effects, on greater sage-grouse are detailed in Chapter 4 on page 4-65 for the proposed action, and page 4-70 for alternative A. Please refer to 4.8.2.2 and the wildlife monitoring/protection plan, Appendix H. We believe monitoring and adaptive mitigation will avoid and detect unanticipated indirect impacts.

**Comment 145-20:** However, the plan is not designed to collect the type of data necessary, with the appropriate statistical rigor, to make any meaningful correlations.

**Response:** The BLM acknowledges your comment, but also wishes to point out that the Wildlife Appendix (H) at 2.0 "Implementation Protocol" also states in part on page H-1:

> "This section provides a preliminary (emphasis added) wildlife inventory, monitoring, and protection protocol for the DFPA."

The monitoring plan, as detailed in Appendix H, is designed to allow for the BLM, working in concert with other agencies, such as the US Fish and Wildlife Service, Wyoming Game and Fish Department, Project Operators and others to design survey protocols, monitor, assess and adaptively manage mitigations as needed.

**Comment 145-21:** Raptor inventories are only to be conducted every 5 years. Therefore, it is unclear how raptor nest buffer stipulations will be applied if surveys are not conducted annually to determine if nesting raptors are present.

**Response:** Please refer to our response to comment 145-20.

**Comment 145-22:** The techniques that will be used to make the suitable habitat determination should be included in this monitoring plan to assist the Bureau and project proponents with project planning.

**Response:** Please refer to our response to comment 145-20.

**Comment 145-23:** Page H-16, Wildlife Monitoring Plan, Section 2.3, Protection Measures: While these measures should minimize potential impacts, there has been no evaluation of their effectiveness on previous projects.

**Response:** The Rawlins Field Office interdisciplinary specialists have worked on numerous oil and gas development project in the past. These actions and their effects are common, and well known. Mitigations are used because they are effective and known to work. While the BLM agrees that programmatic or scientific studies from the past would be useful in evaluating upcoming projects, performing such studies is outside the scope of the DFPA. The wildlife monitoring plan is intended to provide much of these evaluations over time, but they are not available now.

**Comment 145-24:** Page H-17, Wildlife Monitoring Plan, Section 2.3.1, Raptor Protection Measures: The monitoring plan states that well locations, roads, ancillary facilities and other surface structures requiring a repeated human presence will (not) (sic) be constructed within 825 feet of active raptor nests (1,200 feet of ferruginous hawk nests). But the plan does not

provide any information that demonstrates these distances will be effective in reducing the potential effects of project-related disturbance on nesting raptors. Also, on page 4-67, the DEIS states that no surface structures will be built within 300m (approx 990ft.) of inactive raptor nests. The Bureau needs to resolve this discrepancy, and provide the supporting information that the selected buffer distances are adequate to protect nesting raptors.

**Response:** Distances were determined through on-going field monitoring and from reviewing available research findings. A wide variety of research was taken into account in making this determination, and BLM is comfortable with these distances when coupled with monitoring. The text has been changed at 4.7.3.1.5 to reflect 1200 feet for ferruginous hawks, and 825 feet for other.

**Comment 145-25:** The Bureau prohibits construction of well sites, access roads, and pipelines within 500 feet of surface water, for the protection of riparian resources, including the yellow-billed cuckoo. However, the monitoring plan does not identify any provisions to minimize indirect effects to this bird, if it occurs. This should be corrected.

**Response:** The DFPA DEIS, on page 4-84, in analyzing the effects of the proposed action, states:

> "In Wyoming, the yellow-billed cuckoo prefers cottonwood stands for foraging and willow thickets for nesting (WYNDD 2001). Yellow-billed cuckoos have not been observed on or near the project area (WGFD 2000a) and they are not expected to occur due to a lack of suitable habitat. No adverse impacts to this species are expected from implementation of the proposed action."

Within the scope of the DFPA, the BLM does not have any options to further the recovery of the cuckoo in our opinion.

**COMMENT LETTER 146: CAROLE "KNIFFY" HAMILTON, USDA FOREST SERVICE, BRIDGER-TETON NATIONAL FOREST**

**Comment 146-1:** Adequacy of data analyzed. Data does not reflect the current conditions on the ground. Requests that more analyses be completed using current data, updated RFD inventory, and the incorporation of impacts from the Powder River Basin CBM project.

**Response:** Complex air quality analyses will never reflect actual conditions on the ground as the studies require a significant amount of time to complete, while at the same time new emission sources are permitted on a daily basis and project proponents are continuously proposing new developments. Updated information has been included with the FEIS that an extended period of time did elapse between the completion of the air quality analysis and the publication of the DEIS.

**Comment 146-2:** Significance of Visibility Impacts. The Forest Service has reviewed cumulative visibility impacts from Desolation Flats combined with other recently proposed projects in Wyoming and has determined that the impacts are significant. The Forest Service requests that additional modeling be completed to include Washakie and Teton Wilderness Areas and to evaluate if updated cumulative sources would indicate additional impacts.

**Response:** We ask the Forest Service to consider that cumulative impacts predicted in the Desolation Flats analysis cannot be combined with the results of other recent analyses to

estimate total impacts. The transport of emissions from different sources, and the resulting impacts upon visibility, is a complex process with non-linear results. Thus predicted impacts for one analysis cannot be added with impacts from other analyses.

As reiterated in the Forest Service comment, the Desolation Flats cumulative analysis predicted a total of 25 days of visibility impairment. Of these 25 days, 23 days of visibility impairment are predicted to occur without any contribution of emissions from Desolation Flats. The Desolation Flats project is predicted to contribute only to two days of visibility impairment greater than 0.5 dv, however these two days of impairment are not solely caused by Desolation Flats, but rather by the combination of emissions from the project in association with the emissions from hundreds of operating sources and other reasonable foreseeable future sources.

As for the inclusion of Washakie and Teton Wilderness areas in the analysis, please see the following explanation.

In the application of dispersion models to predict air quality impacts, the limitations of the applied models and associated methodologies must be acknowledged. The EPA has evaluated concerns with the adequacy of the CALPUFF dispersion model to address certain instances of long range transport (Federal Register Vol. 69, No. 29, Thursday February 12, 2004, page 6977). The EPA confirms that CALPUFF has adequate accuracy for use in the 50 to 200 km range. This conclusion is in agreement with the Interagency Workgroup on Air Quality Modeling (IWAQM), which conducted several studies to evaluate CALPUFF's performance. IWAQM has recommended the use of CALPUFF for transport distances on the order of 200 km or less. In addition, IWAQM concluded that there are serious concerns with the use of CALPUFF at distances over 300 km (Interagency Workgroup on Air Quality Modeling Phase 2 Summary Report and Recommendations for Modeling Long Range Transport Impacts, December 1998, page 18). Accordingly, the EPA recommends caution with the use of CALPUFF at such long transport distances.

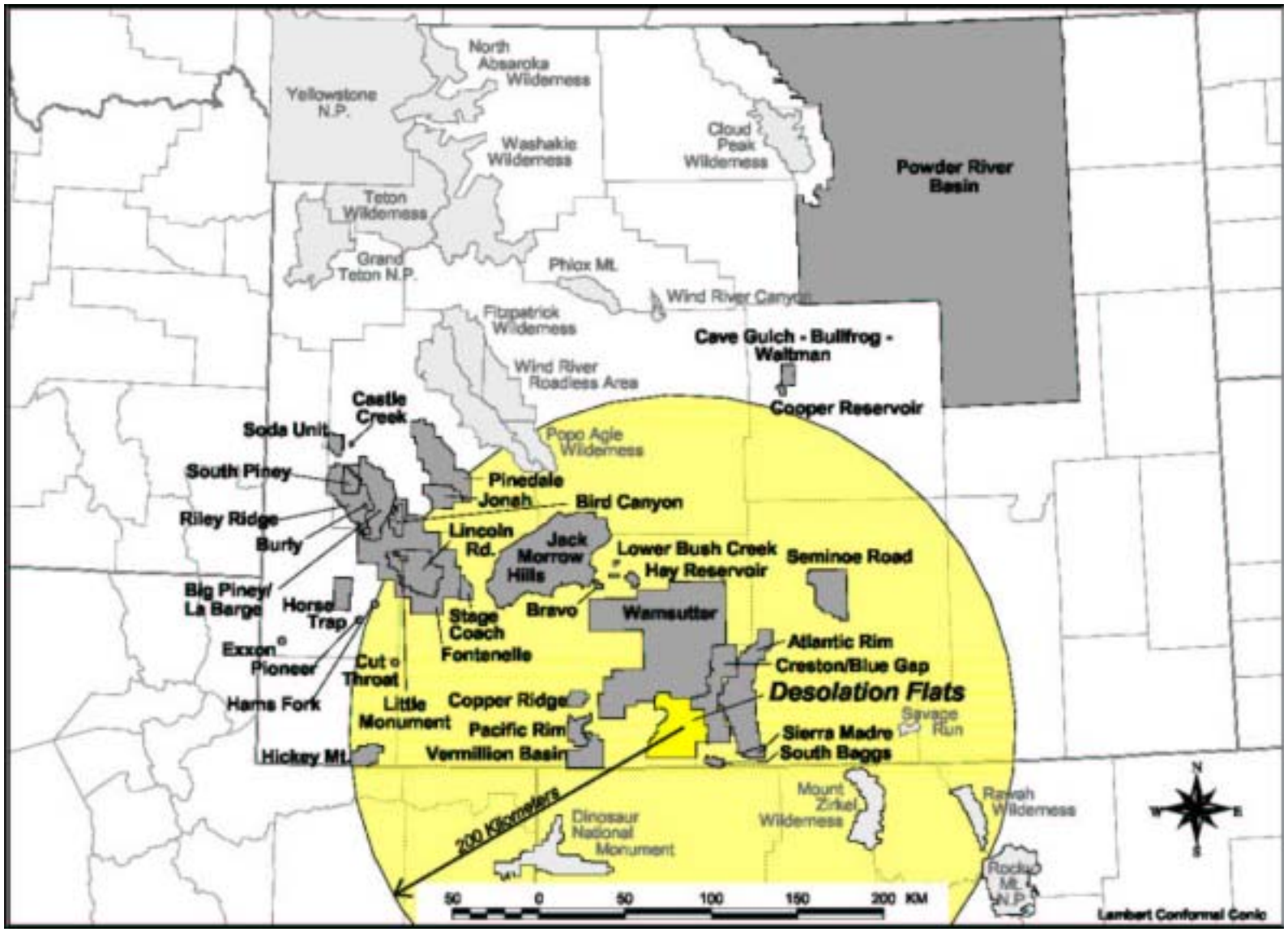
In light of the above information, the following can be concluded concerning the adequacy of the Desolation Flats cumulative analysis and comments received from the public.

1) The Forest Service and other stakeholders have requested the inclusion of Washakie and Teton Wilderness areas in the analysis. Washakie Wilderness ranges from 275 to 375 km from the Desolation Flats Project Area, and Teton Wilderness ranges from 325 to 375 km from the Project. Given these very long transport distances and the limitations of CALPUFF, the inclusion of Washakie Wilderness, Teton Wilderness, and other more distant areas of concern (Yellowstone N.P., Grand Teton N.P., etc.) would not be appropriate. Analysis of these more distant areas would likely lead to meaningless results.

2) The Forest Service and other stakeholders have submitted comments concerning the completeness and timeliness of the RFD inventory. Of primary concern was the exclusion of the Powder River Basin CBM project from the RFD inventory. The Powder River Basin project ranges from 250 to 475 km from the Desolation Flats project area. Again, with such great transport distances, the inclusion of the PRB project would not be technically appropriate as the cumulative impacts resulting from the Desolation Flats Project in conjunction with PRB sources cannot be accurately predicted. Other NEPA projects excluded from the RFD inventory are discussed below. Potential impacts associated with several of these projects have been, or will shortly be, disclosed to the

public. Other projects should not be included in the Desolation Flats analysis for technical reasons discussed below.

| NEPA Project | Status |
|---|---|
| South Piney CBM | This project is located approximately 225 km from Desolation Flats, beyond the accuracy limitations of the CALPUFF model. The BLM expects that the EIS for this project will be available in the fall of 2004. |
| Jonah Field Infill | Located approximately 200 km from Desolation Flats, near the accuracy limitations of the CALPUFF model. Project and cumulative impacts associated with the Jonah Infill project will be disclosed in a separate EIS to be released in the fall of 2004. |
| Seminoe Road CBM | Emissions associated with this project have not been quantified. Therefore, the inclusion of this project in the Desolation Flats analysis would be purely speculative. The EIS for this project is expected to be released in the fall/winter of 2004. |
| Atlantic Rim | Emissions associated with this project have not been quantified. Therefore, the inclusion of this project in the Desolation Flats analysis would be purely speculative. The EIS for this project is expected to be released in the fall/winter of 2004. |
| Wind River Natural Gas Development | This project is located approximately 225 km from Desolation Flats, beyond the accuracy limitations of the CALPUFF model. |
| Big Porcupine CBM | This project is approximately 325 km from Desolation Flats, beyond the accuracy limitations of the CALPUFF model |
| Copper Ridge Shallow Gas Project | Impacts associated with this project have been disclosed to the public. A DR/FONSI was issued in December 2003. |
| Little Monument Unit Natural Gas Infill Drilling Project. | This project is located approximately 180 km from Desolation Flats, near the practical limits of CALPUFF. A DR/FONSI was published for Little Monument in January 2004. |
| Pacific Rim Shallow Gas Well Project | The BLM expects that the EIS for this project will be available in the summer/fall of 2004. |


North Absaroka Wilderness
Yellowstone N.P.
Washakie Wilderness
Cloud Peak Wilderness
Powder River Basin
Teton Wilderness
Grand Teton N.P.
Phlox Mt.
Wind River Canyon
Fitzpatrick Wilderness
Cave Gulch - Bullfrog - Waltman
Wind River Roadless Area
Cooper Reservoir
Castle Creek
Soda Unit
Popo Agie Wilderness
South Piney
Pinedale
Jonah
Bird Canyon
Riley Ridge
Lincoln Rd.
Jack Morrow Hills
Lower Bush Creek
Hay Reservoir
Seminoe Road
Burly
Big Piney/ La Barge
Horse Trap
Stage Coach
Bravo
Warnsutter
Exxon
Pioneer
Cut Throat
Fontenelle
Atlantic Rim
Creston/Blue Gap
Desolation Flats
Hams Fork
Little Monument
Copper Ridge
Pacific Rim
Savage Run
Sierra Madre
Hickey Mt.
Vermillion Basin
South Baggs
Mount Zirkel Wilderness
Rawah Wilderness
Dinosaur National Monument
200 Kilometers
Rocky Mt. N.P.
50 0 50 100 150 200 KM
Lambert Conformal Conic

**Comment 146-3:** The FS believes that updated cumulative air quality analysis as requested in items 1 and 2 above, will highlight the need for some type of large scale mitigation to occur before this project can move forward in the development stage.

**Response:** A revised mitigation analysis was incorporated into the document. Further mitigations are not required to comply with Wyoming and National air quality standards.

**Comment 146-3a:** The FS requests the BLM to conduct an extensive analysis of potential mitigations (to determine costs, practicality and effectiveness) for the Final EIS which may reduce overall emissions affecting sensitive areas, including Class I area while allowing future gas developments to occur. The need for this analysis goes beyond this project, and will become necessary as new project are proposed, analyzed and developed.

**Response:** Analysis beyond this project is beyond the scope of this project. Rawlins Field Office is currently conducting a land use planning exercise which may provide the "extensive analysis" you request.

**Comment 146-4:** This sentence states:

> "BLM feels the 1145 well number is not completely accurate since it is highly likely many of the abandoned wells have been reclaimed since 1985."

This implies the BLM does not track reclamation of well sites. Is this true???

**Response:** BLM does not track reclamation, per se, it tracks well status. All wells listed as "plugged & abandoned" have been fully reclaimed and the Operator's performance bond released. Wells with the status "abandoned" (ABD) have been plugged, and may or may not be reclaimed. ABD wells may have been reclaimed, but they have not yet been accepted and released by the BLM. The text in the FEIS has been changed to reflect this.

**Comment 146-4a:** Isn't this a responsibility of the land management agency??

**Response:** It is.

**Comment 146-4b:** Why in the last sentence of this paragraph are you making an assumption of reclamation rather than knowing the status of reclamation of abandoned wells??

**Response:** This language has been corrected in the FEIS.

**Comment 146-10:** Page 3-18 Additional Class I Areas

**Response:** Refer to our response to Comment 146-2.

**Comment 146-11:** Page 3-20. The standard visual range for the Bridger wilderness should be represented as 175 KM, not 175 miles.

**Response:** Updated visibility data are presented in the final document.

**Comment 146-12**: Pg 3-21 Table 3-9. Why were these dates selected for your visibility data baseline?

**Response:** The Forest Service is possibly misinterpreting the data in Table 3-9. The referenced dates were not used as the baseline visibility data. In discussing existing visibility

conditions, the most current seasonal and annual summary data available from the IMPROVE website are provided. This was not meant to imply that these data were used as representative background conditions for the analysis. As discussed in the Air Quality Technical Support Document, a 1995 baseline date was utilized for the analysis, and the corresponding background visibility data consistent with the 1995 date were applied for the analysis.

**Comment 146-13:** Pg. 3-22, Table 3-10. This table should include a sample number.

**Response:** Only summary ANC data were provided by the Forest Service which did not include the number of samples comprising the background values.

**Comment 146-14:** Pg 3-22 fig. 3-6 Revise map with additional Class I areas.

**Response:** The subject figure was amended as requested.

**Comment 146-15**: Pg. 3-23 Is it proper to show visibility in terms of dv?

**Response:** De**c**iview or dv is one of three common metrics by which visibility can be assessed, the other two being standard visual range (SVR) and extinction ($b_{ext}$).

**Comment 146-16:** Pg. 3-94 General comment – Data should have been updated.

**Response:** We acknowledge that a substantial period of time has elapsed between the completion of the analysis and the publication of the DEIS.

**Comment 146-17:** Pg. 4-9 Table 4-2 Make units consistent.

**Response:** The subject Table was amended to indicate both miles and kilometers.

**Comment 146-18:** Pg 4-12. Assumptions for flaring?

**Response:** Assumptions for flaring emissions are specified in Appendix A, pg. 13 of the emissions inventory report. As shown, Project Proponents estimated the average flaring rate at 2.5 MMscf/well over a three day period, resulting in NOx emissions of 176 pounds/well.

**Comment 146-19:** Pg 4-12 Well Emissions.

**Response:** We assume that the FS is referring to well venting as part of the production operations to clear accumulated fluids from the wellbore. Project Proponents did not anticipate the need for well venting during production operations. Therefore these emissions were not included in the inventory.

Vehicle emissions associated with production operations were not specifically addressed in the analysis as they were considered insignificant.

**Comment146-20:** Pg 4-21 Ozone

**Response:** Ozone is not directly emitted by sources, but rather is formed in the lower atmosphere through a complex process of chemical reactions. This makes the quantification of ozone impacts very difficult. Comments provided by the WDEQ-AQD indicated that the 8-hr

Ozone standard has not been implemented in Wyoming and therefore the Division is currently not requiring compliance demonstrations for these standards.

**Comment 146-21:** Pg. 4-24 Background at Dinosaur.

**Response:** The statement was deleted from the document.

**Comment 146-22:** Pg. 4-24 Bridger Background Visibility Data.

**Response:** As discussed in the Air Quality Technical Support documents, a 1995 baseline data was used for the emission inventory. Although more recent background visibility data were available, only data through 1995 were used in order to avoid double counting monitored and modeled impacts.

**Comment 146-23:** Pg. 4-25 PM2.5 standard omitted.

**Response:** According to Cara Casten of WDEQ-AQD, the new PM 2.5 and O3 standards have not been implemented in Wyoming. Therefore the WDEQ is currently not requiring compliance demonstrations for these standards.

As per WDEQ-AQD recommendations, Chapter 3 of the document was revised to acknowledge the new standards, with a footnote indicating the current status. In Chapter 4, potential impacts were not compared to the new standards.

**Comment 146-24:** Pg. 4-29 Wind generated power.

**Response:** A more detailed discussion of mitigation measures was added to the final document.

**Comment 146-25:** Pg 4-29 Offsite NOx Mitigation.

**Response:** The installation of low NOx burners at the Naughton Power Plant is a prime example of off-site mitigation.

**Comment 146-26**: Pg. 5-6 Naughton NOx mitigation.

**Response:** Document was amended to indicate Ultra Petroleum as the proponent of the low NOx burners.

**Comment146-27:** Pg. 5-6 Cumulative analysis only includes sources through 2001.

**Response:** The cumulative impacts section was updated with a qualitative discussion.

**Comment 146-28:** Pg. 5-8 RFD Location

**Response:** We appreciate your affirmative comment.

**Comment 146-29:** Pg. 5-11 Reference to Section 4.2.8.

**Response:** The correct reference should be 4.2.3.1.5. The document was revised as appropriate.

**Comment 146-30:** Pg. 5-11 Background Visibility Data

**Response:** See Comment 146-22 Response. As discussed in the Air Quality Technical Support documents, a 1995 baseline data was used for the emission inventory. Although more recent background visibility data were available, only data through 1995 were used in order to avoid double counting monitored and modeled impacts.

**Comment 146-31:** Pg. 5-11 Cumulative analysis not up to date.

**Response:** The cumulative impacts section was updated with a qualitative discussion.

**Comment 146-32:** Pg. 5-12 DV interpretation.

**Response:** There is no intent to imply that deciview values are additive. The percentage column was removed from the table to avoid confusion.

**Comment 146-33:** Pg 5-12. Acid deposition.

**Response:** The cumulative impacts section was updated with a qualitative discussion.

**Comment 146-34:** Pg 5-13 Acid Deposition.

**Response:** The cumulative impacts section was updated with a qualitative discussion.

**Comment 146-35**: Section 5.3.2.5 Adequacy of data.

**Response:** The cumulative impacts section was updated with a qualitative discussion.

**Comment 146-36:** Section 5.3.2.5 Adequacy of analysis.

Response: The cumulative impacts section was updated with a qualitative discussion.

**Comment 146-37:** General Comment regarding visibility analysis.

**Response:** We refer the Forest Service to the Introduction to Visibility report available on the Improve website at http://vista.cira.colostate.edu/improve/Education/IntroToVisinstr.htm

**COMMENT LETTER 148: BARK KOEHLER, DIRECTOR, THE WILDERNESS SOCIETY'S WILDERNESS SUPPORT CENTER.**

**Response:** Thank you for your comment.

**COMMENT LETTER 149: TOVA WOYCICCHOWICZ**

**Response:** Thank you for your comment.

**COMMENT LETTER 150: ERIK MOLVAR, BIODIVERSITY CONSERVATION ALLIANCE**

**Subheading I: The Reasonably Foreseeable Development Scenario Has Been Exceeded.**

***Refer to BLM Policy 150-1 for the following responses.***

**Comment 150-1a:** Since the Great Divide RMP was approved with a reasonably foreseeable development scenario of 1,440 wells over the life of the Plan, 1,628 wells have been exceeded by almost 200 wells, and now this project would propose to add another 300-500 wells.

**Response:** The Reasonably Foreseeable Development (RFD) scenario, does not represent a planning decision, rather it is an assumption to analyze the effects that discretionary management decisions have on oil and gas activity. The Great Divide RMP and the oil and gas RFD scenario recognizes development on two levels; 1) number of wells permitted and 2) amount of surface disturbance associated with development. 1,440 wells you mention was just one of the assumptions used, along with other data to determine the effects of oil and gas development. The number of wells permitted is one RFD reference point, the number of surface acres disturbed per well represents another. Surpassing one of these points does not necessarily mean additional development cannot occur. One consideration is the extent of disturbance per well has reduced steadily over the planning period resulting in less disturbance impacts than anticipated per well. Should the number of wells and the level of surface disturbance exceed those analyzed in the Great Divide RMP, BLM would re-examine the RMP assumptions and compare them to actual on-the-ground impacts to determine if further oil and gas exploration and development is an appropriate action.

**Comment 150-1b:** When combined with the 1,200 CBM wells forecasted for the Seminoe Road project, not to mention the nearly 4,000 CBM wells forecasted for the Atlantic Rim project, it is indisputable that the RFD has been exceeded many times over.

**Response:** Only the exploratory wells from the Seminoe Road and Atlantic Rim Natural Gas projects are included in calculations of RFD for Desolation Flats. Because no Record of Decision has been issued for either, development at Seminoe Road and Atlantic Rim is not reasonably foreseeable at this time as it is with exploratory projects such as Brown Cow Pod for instance. The BLM agrees that the RFD scenario disturbance acreage level is getting close to being met, as demonstrated by the analysis in the DEIS. Continued oil and gas development and exploration has brought the RFO even closer to the line, and this condition is being assessed in the on-going Resource Management Plan revision under way at this time in Rawlins. The final EIS for DFPA includes an updated disturbance calculation from 2004 for consideration.

**Comment 150-1c:** Plugged and abandoned wells do in fact count toward the RFD totals as their impacts (weed infestation, surface disturbance) are felt years beyond abandonment.

**Response:** Plugged and abandoned wells do not count towards the disturbance figure because they do not enter that category until they have been site reviewed and accepted as reclaimed by the BLM. Notice of intent to abandon wells may be reclaimed but not yet accepted, but since no empirical data is available they are not counted in the DEIS as reclaimed.

**Comment 150-1d:** Moreover, the true number of wells should properly include some or all of the 2,774 so-called plugged and abandoned wells-because, despite BLM's claim that they've

been reclaimed, the Wamsutter II analysis in 1998 noted many of the P&A wells since 1985 had not been reclaimed within 13 years.

**Response:** Oil and gas disturbance must be successfully reclaimed and approved by BLM before the Operator's performance bond is released back and the well re-classified to the "Plugged & Abandoned" category.

**Comment 150-1e:** However, this current project adds 5,000 disturbed acres in addition to the acreage affected by the Seminoe Road, Atlantic Rim, Mulligan Draw, Greater Wamsutter II, Continental Divide/Wamsutter II, Creston/Blue Gap, Uinta Basin Lateral Pipeline, Hay Reservoir Unit, South Baggs Area and Vermillion Basin Projects.

**Response:** As detailed in the DEIS for the Rawlins Field Office, Chapter 1, pages 1-11 through 1-14, the project is expected to add 1,422 acres of long term disturbance for the proposed action and 2,238 acres of disturbance for Alternative A. Further detail can be found in Chapter 1. Actual and projected long term disturbance acreages have been updated for the FEIS.

**Comment 150-1f:** Here, we ask two things of BLM in the FEIS: first, the total acreage affected or allowed by the project authorizations to be affected for these oil and gas fields in relation to the cumulative acreage allowed in the RMP and in relation to the year by year anticipated disturbances.

**Response:** That information has been included in the FEIS, and is discussed in detail in the DEIS in Chapter 1, pages 1-11 through 1-14. The FEIS includes oil and gas related disturbance updated from January 2004.

**Comment 150-1g:** Second, as a RFD scenario necessarily sets the cap on a cumulative impacts analysis, which included all form of development, we ask BLM for the entire Great Divide Resource area, to ensure that the acreage totals requested above include all state, private and federal development from the 1990 RMP (1987 DEIS) to the present day. The sum total of these projects studied, authorized or led to 5,000 wells, many of which are within the Great Divide resource area.

**Response:** In assessing compliance with the RFD analysis scenario, all oil and gas development in included. This includes state, private, and federal wells as listed on the Wyoming State Oil and Gas Commission records. There is a detailed analysis in the DEIS based on conditions as of 12/31/01. The FEIS reflects conditions updated as of January 2004.

**Comment 150-1h:** Therefore we suspect that the cumulative impacts analysis of the RMP, tied to its far-exceeded RFD, does not allow for this current proposal.

**Response:** The BLM agrees that the RFD cumulative effects analysis allowable disturbance limitation acreage is being approached. Detailed analysis presented in the DEIS supports the conclusion the proposed action will not exceed the RFD used to support decisions made in the Great Divide RMP. An updated analysis was included in the FEIS.

**Comment 150-1i:** We note that any argument that BLM can do the RMP revision and the current EIS simultaneously, violates a fundamental principal of NEPA that an agency, here BLM, not undertake any action that may jeopardize the full range of alternatives in the revised

RMP, which may include very different conditions of approval and mitigation measures for wildlife and other resources than are proposed for this project.

**Response:** The Desolation Flats EIS is consistent with the direction found in 43 CFR 1610.5-3, "Conformity and Implementation." It reads in part:

> "All future resource management authorizations and actions, as well as budget or other action proposals to higher levels in the Bureau of Land Management and Department, and subsequent more detailed or specific planning shall conform to the approved plan".

Again, we disagree with your assessment that the RFD has been exceeded. The proposed activities and level of development described in the Desolation Flats DEIS conforms to the approved Great Divide Resource Area Record of Decision and Approved Resource Management Plan and the Green River Resource Management Plan. BLM currently has direction from our Washington Office under Instruction Memorandum No. 2001-191. It states, when a RMP is being amended or revised, BLM will continue to process site-specific permits, sundry notices, and related authorizations on existing leases. It states that when processing an APD during this time, BLM must make a determination on plan conformance. Site-specific NEPA analysis may include a cumulative impact analysis, especially where impacts projected for RFD scenarios are or will be exceeded. Although as stated previously, approval of the Desolation Flats project will not exceed the RFD used for analysis in the Great Divide RMP, but even if it did, BLM policy allows for the approval of APDs during land use planning, even if the RFD has been reached.

**Comment 150-1j:** To allow more wells and massive projects for more oil patches undermines not only the FLMPA planning process, but also the direct and cumulative effects analysis under NEPA for oil and gas in the planning area.

**Response:** Please refer to our response to comments 1h and 1i above.

**Comment 150-1k:** FLPMA calls for an immediate halt to further project approvals in the Great Divide resource area because BLM has exceeded the level of development authorized under the RMP.

**Response:** Please refer to our response to comments 1a and 1h.

**Comment 150-1l:** In fact, BLM has admitted that as many as 5,000 wells are foreseeable in the resource area based on approved and ongoing projects, yet its RMP considers the prospect of only 1,440 wells. At present, the number of wells on the ground, and certainly those under consideration, and the present-day RFD scenario far exceeds the limits set by the 1990 RMP. By exceeding these baselines to such a degree, BLM has clearly ignored the regulatory directive established by 43 C.F.R. 1610.5-3 (a), as these project and well approvals are outside anticipated levels of the RFD and therefore an action that does not conform to the RMP.

**Response:** Please refer to our response to comments 1a, 1i, and 1h.

**Comment 150-1m:** BLM further violated its own planning regulations by failing to amend the RMP prior to this and other projects. BLM "shall" initiate and complete a plan amendment when "a proposed action that may result in a change in the scope of resource uses or a change in the terms, conditions and decisions of the approved plan.

**Response:** Please refer to our response to comments 1a, 1i, and 1h.

**Comment 150-1n:** The point here is rather simple: The RMP allowed for a certain number of wells that it considered in its RFD cumulative impacts analysis. When that number has been surpassed, and will continue to be surpassed with additional project and APD approvals, the RMP must be amended to account for and thoroughly analyze this predicted future development. The current revision process of the Great Divide RMP does not help "cure" any NEPA of FLPMA deficiencies for projects already approved in the interim.

**Response:** Please refer to our response to comments 1a and 1h.

***Refer to BLM Policy 150-2 for the following responses.***

**Comment 150-2a:** Continuing to lease lands before the revised RMP is released violates NEPA.

**Response:** The Desolation Flats EIS does not propose to lease lands with the DFPA.

**Comment 150-2b:** The point here is rather simple-information may be gained during the RMP revision process in terms of wildlife protective measures, new technologies that should be employed to reduce impacts and other impact-reducing measures. To proceed with a major EIS and natural gas field approval now, before those new measures are developed, studied and adopted, may authorize a project with different (and most likely, more lenient) mitigation measures than those developed in the new RMP.

**Response:** The Desolation Flats EIS is consistent with the direction found in 43 CFR 1610.5-3, "Conformity and implementation." It reads in part:

> "All future resource management authorizations and actions, as well as budget or other action proposals to higher levels in the Bureau of Land Management and Department, and subsequent more detailed or specific planning shall conform to the approved plan".

The Desolation Flats EIS conforms to the approved Great Divide Resource Area Record of Decision and Approved Resource Management Plan and the Green River Resource Management Plan. The Desolation Flats DEIS, is a programmatic document and is not authorizing any site-specific activity, however, even if it were, BLM policy found in Instruction Memorandum No. 2001-062, recognizes that BLM can use its authority and discretion to condition its approval of proposed actions to not constrain alternatives under consideration in an RMP revision or amendment consistent with the lease rights granted. Any site-specific activity approved in the DFPA after the approval of the RMP would be subject to the management prescriptions described in the new document.

**Subheading II: Illegal Deferral of Analysis to Subsequent Stages of Development**

***Refer to BLM Policy 150-3 for the following responses.***

**Comment 150-3a:** The BLM has deferred any hand in the management of oil and gas development in the DFPA to market forces, abdicating its responsibility to actively manage oil and gas development. According to the DFEIS,

> "The precise number of additional wells, locations of the wells, and timing of drilling associated with the proposed natural gas development project would be directed by the success of development drilling and production technology and

> economic considerations such as the cost of development of leases within the project area with marginal profitability."

DFEIS at 2-1. The BLM later states,

> "Accurately predicting the total number of wells and the timing of drilling operations is difficult due to the limited amount of natural gas exploration and the geologic complexities in the DFPA."

DFEIS at 2-3. We would humbly submit that the BLM could accurately predict the number and location of all future wells in the planning area with 100% accuracy if these variables were set is stone in the DFEIS as they should be according to law. But according to federal law, the number of additional wells, well locations, timing of drilling and construction should not be dictated by market forces, but by environmental and multiple use considerations.

**Response:** At this time the location of all future well sites and other disturbance cannot be determined with 100% accuracy by any process the proponents or BLM are aware of. "Setting in stone" well locations in the EIS would require predicting well locations with information in hand, and ignoring the fact that each well provides additional information that is utilized to help determine future actions, including the number of wells and well site locations. Currently, generalized areas of interest are being explored through the interim drilling process to further develop our knowledge of the geology and potential of the DFPA. Adaptive management of oil and gas resource development is very much a reality in that new information produces more effective drilling programs with correspondingly reduced effects upon the environment. The number of wells, well locations, timing of drilling, and construction is controlled in part by the location of gas and oil resources as they are found and developed, within the context of BLM's responsibility to ensure surface disturbance is managed in accordance with both the law and sound resource management.

**Comment 150-3b:** In essence, then, this EIS will not look at the actual impacts of the proposed project, but instead masks a massive quarter million acre oil and gas exploratory project in the name and guise of a thorough hard look at site-specific impacts in a project level document."

**Response:** There is no attempt to mask a thorough hard look at site-specific impacts. The DFPA is not a project level document, it is a programmatic document. Site-specific impacts will be thoroughly reviewed under the NEPA regulations by tiering site specific environmental analysis to the Desolation Flats Record of Decision (ROD). The regulations for implementing the procedural provisions of the National Environmental Policy Act, issued by the Council on Environmental Quality are found in 40 CFR Parts 1500-1508. 40 CFR 1502.2 States:

> "Agencies are encouraged to tier their environmental impacts statements to eliminate repetitive discussions of the same issues and to focus on the actual issues ripe for decision at each level of environmental review (1508.28). Whenever a broad environmental impact statement has been prepared (such as a program or policy statement) and a subsequent statement or environmental assessment is then prepared on an action included within the entire program or policy (such as a site specific action) the subsequent statement or environmental assessment need only summarize the issues discussed in the broader statement by reference and shall concentrate on the issues specific to the subsequent action. The subsequent document shall state where the earlier document is available. Tiering may also be appropriate for different stages of actions. (40 CFR 1508.28)"

The tiered EIS approach used with DFPA is consistent with the CEQ regulations found in 40 CFR. Section 1508.28 states in part:

> "Tiering is appropriate when the sequence of statements or analyses is:
> (a) From a program, plan, or policy environmental impact statement to a program, plan, or policy statement or analysis of lesser scope or to a site-specific statement or analysis.

The BLM NEPA Handbook (H1790-1) states in part, in Chapter III, C.:

> "1. Purpose and Use of Tiering (40CFR 1508.28) Tiering is used to prepare new, more specific or more narrow environmental documents (e.g., activity plan EA's) without duplicating relevant parts of previously prepared, more general or more narrow environmental documents (e.g. RMP/EIS's)."

The tiered approach used with DFPA is consistent with BLM agency direction including the NEPA Handbook.

**Comment 150-3c:** Again, these and other statements within the EIS undermine its entire purpose – BLM is wholesale admitting it has absolutely no idea where wells will be located, or for that matter, whether there'll be a certain number due to profitability. It naturally follows then, that road, pipeline, compressor and other infrastructure locations are also big questions marks looming over this proposal.

**Response:** The BLM has a general idea of facility locations, but not specific sites in many cases. While the operator and BLM know in general where to place the various actions proposed such as well sites and roads, the exact location will depend on the location of the natural gas resource, guidance from the DFPA EIS, and opportunities and conditions in the field that allow for minimization of environmental impacts, mitigations, and costs. Locating a ground-disturbing activity just a few feet one way or another can often greatly reduced, or increase, the impacts of the action. For any detailed site-specific proposal not fully covered by DFPA EIS, an environmental assessment must be performed and a decision made. This is consistent with the BLM NEPA handbook, the Code of Federal Regulations (43 CFR 3162.5-1, Environmental Obligations) and NEPA. Proposals for individual actions will receive site specific NEPA analysis under the tiering concept utilized by the BLM. See response 3b for more details on legal authorities and BLM policy.

**Comment 150-3d :** The problem? In what conceivable world is BLM then going to be able to actually address site-specific impacts to soils, vegetation, wildlife, surface waters and cultural resource, with this scant information?

**Response:** The real world. See responses 3a and 3b above.

**Comment 150-3d:** Once the project is approved, BLM will then take on APD's and tier back to this EIS for the majority of impacts, and voila, one of BLM's favorite shell games is uncovered: push off important environmental analyses that could be done in the present if BLM bothered to go out and collect information and survey existing resource, to later stages of development – and at the time, "tier back" to the nonexistent analysis in these project level documents.

**Response:** Each APD when submitted is reviewed under a separate site-specific EA in conformance with NEPA. Field reviews and surveys by BLM resource specialists, and consultation with interdisciplinary team members in the EA NEPA process allows for the identification of specific impacts and issues that arise from the proposal. Consultation, when appropriate, occurs with other Agencies including Conservation Districts, US Fish and Wildlife Service, and Wyoming Game and Fish Department. The environmental impacts are assessed and a decision is made by the authorized official on whether the proposal is significant under

NEPA, and which alternative to select in the interest of quality land and resource management. These EA's are tiered to the relevant programmatic document as detailed above.

**Comment 150-3e:** Given that this EIS by BLM's own admissions cannot accomplish its core objectives, a better manner of proceeding in this situation where there is no information on likely producing reserves (and thus well pads, etc.) is to allow a few exploratory APDs to gather the necessary information for a proper EIS that could look at, plan for, analyze and mitigate impacts across a 225,000 acre swath of public land.

**Response:** That is the purpose of allowing interim drilling in the DFPA.

**Subheading III. Failure to Obtain Baseline Data**

***Refer to BLM Policy 150-4 for the following responses.***

**Comment 150-4a:** No baseline data for prairie dogs.

**Response:** Chapter 3 of the DFPA draft EIS (DEIS) details surveys conducted for prairie dog towns and black footed ferret in the Section titled "Threatened, Endangered or Proposed for Listing Species of Plants, Wildlife, and Fish. Consultation has been initiated with USFWS and more information on prairie dogs and black-footed ferrets can be found in the Biological Assessment (Appendix I, Sec. 3.1) prepared for this project.

**Comment 150-4b:** No baseline data for populations (and sometimes even occurrence data) for other BLM Sensitive Species.

**Response:** BLM Sensitive Species Data for BLM Sensitive Species is provided in Chapter 3 in the Section titled "Sensitive Plant, Wildlife, and Fish Species".

**Comment 150-4c:** No baseline data for locations of historic trails known to lie within or near the Desolation Flats Planning Area.

**Response:** Details of historic trail presence are disclosed in Chapter 3 in the Section titled "Historic Sites".

**Comment 150-4d:** Site specific surveys for Threatened and Endangered Species and BLM Sensitive Species would be deferred until just prior to surface disturbing activities; no surveys were conducted for these species prior to the publication of the Draft EIS for Desolation Flats.

**Response:** Site specific surveys will occur, in conjunction with NEPA analysis, when specific sites have been proposed for disturbance, as with the filing of an APD. However, a Biological Assessment has been prepared for the project area and formal and informal consultation has been initiated and completed with the USFWS service. Recommendations made by USFWS for the protection of T&E species found within the DFPA will be included as mitigation during the approval and implementation of site-specific activities, as applicable, to further reduce impacts to T&E species.

**Comment 150-4d2:** BLM also admits that "specific air quality monitoring has not been conducted with the project area."

**Response:** There are no air quality monitoring sites within the DFPA to do "specific monitoring." Air quality monitoring sites are detailed in both the DEIS and the FEIS and are adequate for the purposes of this document.

**Comment 150-4e:** The court further held that,

> "The concept of a baseline against which to compare predictions of the effects of the proposed action and reasonable alternatives is critical to the NEPA process."

Clearly, BLM has failed this basic duty in this DEIS and must provide this information in a second draft EIS so that environmental consequences can be satisfactorily assessed."

**Response:** Please refer to Chapter 3 in the DEIS.

**Subheading IV. The BLM Fails to Analyze a True "No Action" Alternative**

***Refer to BLM Policy 150-5 for the following responses.***

**Comment 150-5a:** Pursuant to NEPA, the "no action" alternative (40 CFR 1502.14 (d)) is supposed to give a baseline comparison for which to compare the impacts of the different action alternatives. The only way to properly do that is a no action alternative that does not allow, at least theoretically, any action. BLM failed to do this – see, e.g., DEIS at 2-3, 2-5 and instead provided for APDs to be approved on federal lands on a case by case basis."

**Response:** The "no action" alternative in the DEIS for the DFPA provides for continued development of actions that have already been approved in other NEPA documents. It also provides for consideration of any other oil and gas development proposals that might be made, not necessarily approval.

**Comment 150-5b:** First, the alternative allows action, which is rather obviously at odds with a "no action" alternative. While BLM is accurate in saying that its post-leasing ability to preclude all drilling is limited (and therefore must allow some drilling, just not each APD), it confuses this legal requirement with the purpose of a no action alternative, which is to assume no action for purposes of establishing a proper baseline comparison.

**Response:** The alternative doesn't "allow" action, it acknowledges that action proposals may come forward for consideration, even without approval of the DFPA. In addition, oil and gas development activities already assessed and approved are reasonably foreseeable actions that will occur if the "no action" alternative is selected in the Record of Decision. Those decisions have been made and are not re-opened for a new decision. Authorizations granted previously are detailed in the section "Alternative B – No Action.

**Comment 150-5c:** Second, the "no action" alternative, as it is set-up, allows for no meaningful impacts analysis. How in the world is BLM supposed to analyze the impacts of APDs that may be granted, and more particularly, "on a case-by-case basis, in as of yet unknown places?

**Response:** When the "unknown place" becomes a known place, the BLM will be able to analyze it, if it should happen.

**Comment 150-5d:** The description of the no action alternative- that it would allow ad hoc APD permitting in unknown places affecting unknown resources – is a far cry from a meaningful

look at what the impacts would be of this project assuming that truly no action for oil and gas took place of federal lands.

**Response:** The alternative doesn't "allow" action, it acknowledges that action proposals may come forward for consideration, even without approval of the DFPA

**Subheading V. Range of Alternatives and Mitigation Measures**

***Refer to BLM Policy 150-6 for the following responses.***

**Comment 150-6a:** No differing alternatives were offered that looked at first finding out the gas reservoirs potential of the focus area (to then build upon in an EIS if full field development was proposed), at different spacing patterns, multiple completions per well pad in different numbers, multiple directional and horizontal wells from pad to reduce impacts and a resource protection alternative, to name a few.

**Response:** Please refer to the Section titled "Alternatives Considered but Eliminated From Detailed Study" for details on why that decision was made. Additional insight to directional drilling can be found on the internet at: http://www.wy.blm.gov/nepa/rsfodocs/vermbasin/VBPA-well-architecture-letter.pdf

**Comment 150-6b**: BLM should note that this basic, fundamental requirement that is the touchstone of every EIS has not gone unnoticed on the federal judiciary in sending back EIS's that fail to meet this requirement.

**Response:** Noted.

**Comment 150-6c**: The present DEIS has only two action alternatives that are practically the same. This type of limited and narrow range of alternatives has met a similar fate in the courts."

**Response:** We disagree with your assessment that the two alternatives are practically the same. There were very specific reasons given in the DEIS for the development of Alternative A. Alternative A was developed to analyze a level of development that might occur should there be an increase demand in the natural gas market or an increase in the price of natural gas, which would make the area more profitable to develop (DEIS at 2-4). These alternatives represent an alternative means of satisfying the identified purpose and need and of resolving issues.

**Comment 150-6d:** The failure to look at the full range of reasonable alternatives is related to BLM's duty in any EIS to develop, study, analyze and adopt mitigation measures to protect other resources. Put simply, the failure of BLM to study and adopt these types of mitigation measures – especially when feasible and economic – means that the agency is proposing to allow this project to go forward with unnecessary impacts to public lands, in violation of FLPMA.

**Response:** Within Chapter 2 of the DEIS, in the section entitled "Project-Wide Mitigation Measures" is detail on over 9 and one half pages of mitigation measures for DFPA. The BLM believes this to be sufficient, coupled with the other mitigations detailed in Chapter 4 and elsewhere.

**Comment 150-6e:** Some examples of a lack in range of mitigation measures include the BLM's proposal to mitigate for impacts to sage grouse leks with a No Surface Occupancy (NSO) buffer of only ¼ mile, rather than the 2-3 mile buffer that is supported in the scientific literature.

**Response:** The sage grouse is a BLM sensitive species, listed as such on 04/09/2001. Because of this status no actions that might jeopardize the future existence or viability of this species may occur. Sage grouse populations have been declining for many years. The Great Divide Resource Management Plan (RMP) in Appendix I lists sage grouse in several areas of the Wildlife Mitigation Guidelines including 2b and 2c. 2c provides for the prohibition of surface activities or use within important habitat areas for the purpose of protecting sage grouse breeding grounds and or habitat where timing stipulations are not appropriate. The purpose of the Guidelines are (1) to reserve for the BLM, the right to modify the operations of all surface and other human presence disturbance activities as part of the statutory requirements for environmental protection, and (2) to inform a potential lessee, permittee, or operator of the requirements that must be met when using BLM-administered public lands. The Guidelines in the RMP are not specific as to the distance an action must be moved to mitigate impacts of a proposal on sage grouse. Literature reviews show that requirements for no surface disturbance (NSD) from a lek generally run in the 0.25 to 2 mile range. The ¼ mile NSD mitigation is generally a minimum distance. Additionally, another mitigation listed on page 2-38 states that no surface disturbance would be allowed within identified patches of greater sage-grouse severe winter relief habitat.

**Comment 150-6f:** …the BLM's maximum of a ¼ mile NSO buffer for the Cherokee Trail, without considering a much larger (3-5) mile buffer that would protect the trail's viewshed and setting…

**Response:** ¼ mile is guidance, not a set rule. The State Historic Preservation Office is consulted when proposals are less than 2 miles away from the trail. Cultural Resources mitigations describe avoidance as the preferred method for mitigating adverse effects to a historic property.

**Comment 150-6g:** ….and the BLM's maximum NSO buffer of only 1,250 feet for raptor nests, when studies indicate that a buffer of ¼ mile to 2 miles is warranted.

**Response:** No disturbance would be allowed during the critical nesting season (Feb1 – July 31, depending on species) within 1 mile of an active nest of listed or sensitive raptor species, and ¾ - ½ mile (depending on species or line of sight) of an active nest of other raptor species. The nature of the restrictions and the protection radius would vary according to the raptor species involved and would be determined by the BLM. This is the seventh wildlife mitigation listed in Chapter 2 of the DEIS, in the section entitled "Project-Wide Mitigation Measures".

**Comment 150-6h:** BLM also adopted many standard conditions of approval and mitigation measures without taking a hard look at whether these measures are effective – numerous oil and gas projects in the region have adopted mitigation measures over the past twenty years and BLM failed to inventory these sites to measure their effectiveness.

**Response:** BLM has adopted standard conditions of approval and mitigation measures for surface disturbance impacts from oil and gas operations over a considerable period of time. Those measures and procedures are considered part of the proposed action and are described in Chapter 2 of the DFDEIS. These conditions and mitigations have been developed by the BLM from observations of the effectiveness of the mitigation or condition, and adaptive modification of the mitigation to make it better when needed, or when better techniques are developed. The actions envisioned for the DFPA are common and their effects well known. Generally the BLM's standard mitigation measures and conditions of approval are adequate to avoid or repair adverse impacts to the environment. Where standard procedures are not

expected to work or results are uncertain for some reason, the BLM adapts procedures and monitors results to ensure unacceptable effects on the environment are avoided. For example, wildlife mitigation and monitoring studies are being conducted in several oil and gas fields such as CD/WII and the Pinedale Anticline to further improve our knowledge regarding how oil and gas may impact wildlife species and better determine the effectiveness of our currently prescribed protection measures. Wildlife mitigation and monitoring is also a part of the Desolation Flats proposal, see DEIS Appendix H.

**Comment 150-6i:** This provision requires

> "the disclosure and analysis of the costs of uncertainty [and] the costs of proceeding without more and better information."
> "On their face these regulations require an ordered process by an agency when it is proceeding in the fact of uncertainty."

**Response:** The actions envisioned for the DFPA are common and their effects well known. Also, please refer to our response to comment 6h.

**Comment 150-6j:** Unless the costs are exorbitant or the means of obtaining the information are not known, the BLM must gather the information in studies or research.

**Response:** The actions envisioned for the DFPA are common and their effects well known.

**Comment 150-6k:** Thus, the present EIS is deficient by not taking a hard look at the effectiveness of the chosen mitigation measures and particularly so given the duty to look at readily accessible data from projects such that totaled 1,775 oil and gas wells drilled before 1987, or 16 years ago. DEIS at 1-12. That means there is a lot of readily available data out there the BLM has ignored in evaluating the effectiveness of the mitigation measures in this case. Simply listing and not analyzing the effectiveness of the measures also results violation of NEPA.

**Response:** Conditions of Approval and mitigations have been developed over the years by the BLM from observations of the effectiveness of the mitigation or condition, and adaptive modification of the mitigation to make it better when needed, or when better techniques are developed. Additional mitigation not considered as part of the proposed action (Ch. 2) are described in Chapter 4 of the DFDEIS. Per NEPA (40 CFR 1502.14(f)), BLM Policy as described in the BLM NEPA Handbook, H-1790-1, page V-8, and the courts, the DFDEIS describes how these measures are anticipated to avoid, minimize, or eliminate impacts to affected resources. Also, please refer to our response to comment 150-6h.

**Subheading VI. The Desolation Flats DEIS Exemplifies the Wyoming BLM's Failure to Address the Cumulative Actions of Oil and Gas Development in the Greater Green River Basin.**

***Refer to BLM Policy 150-7 for the following responses.***

**Comment 150-7:** The Desolation Flats DEIS Exemplifies the Wyoming BLM's Failure to Address the Cumulative Actions of Oil and Gas Development in the Greater Green River Basin.

**Response:** As detailed in Chapter 5 "Cumulative Impacts Analysis", potential cumulative impacts are assessed at the resource level in the DEIS. Cumulative impacts area (CIA) varies for each resource area assessed. Addressing the cumulative actions of oil and gas

development in the entire Greater Green River Basin which encompasses lands in three states is outside the scope of this assessment.

**Subheading VII: There is no Purpose and Need for this Project.**

***Refer to BLM Policy 150-8 for the following responses.***

**Comment 150-8a:** There is No Purpose and Need for this Project.

**Response:** The purpose and need for this project is detailed in Chapter 1 "Purpose and Need".

**Comment 150-8b:** Secondly, the BLM's "No Action" alternative (which in fact continues drilling on valid existing leases, rather than implementing no action) would authorize the drilling of 23 additional wells in the Mulligan Draw area and 34 additional wells in the Dripping Rock Springs area, plus additional wells outside these project area on a case-by-case basis. Thus, gas development on existing lease will continue even if an "action" alternative is not selected.

**Response:** The "No Action" alternative will not authorize further development as asserted. It recognizes that this development has already been approved under earlier environmental analysis and consequently is a reasonably foreseeable development within the DFPA. In other words it is the continuation of existing management. Your assertion that

> "gas development on existing lease will continue even if an "Action" alternative is not selected, as if the Desolation Flats EIS had never existed"

is probably correct in most cases. Refer to response 150-5a.

**Comment 150-8c:** Thus, this EIS serves no purpose and is not needed for oil and gas development to continue in the area, the DEIS has no legitimate Purpose and Need and should be abandoned before additional taxpayer dollars are wasted on this boondoggle.

**Response:** See the response above regarding the purpose and need for the DFPA DEIS. Details of the DEIS and its place in the assessment of environmental impacts to the DFPA are found in Chapter 1, "Purpose and Need for Action", section 1.3 "Environmental Analysis."

**Subheading VIII: Visual Resources Do Not Receive Adequate Protection Under the Proposed Action.**

***Refer to BLM Policy 150-9 for the following responses.***

**Comment 150-9a:** And how does the specific pattern of development (i.e. particular siting of roads, wells, pipelines) relate to these sensitive visual resources?

**Response:** The specific pattern of development is unknown at this time, but will develop as individual site specific proposals come to BLM for approval and site specific NEPA analysis tiered to the DF ROD.

**Comment 150-9b:** Finally, the BLM should identify important viewsheds from the standpoint of public recreation and solitude, with special provisions that guarantee that the viewsheds in popular recreation areas like Powder Rim and Adobe Town/MVMA do not suffer from degradation as a result of the Desolation Flats project.

**Response:** Identification of important viewsheds occurs in the Great Divide and Green River Resource Management Plans. Identification of additional important viewsheds is out side the scope of the Desolation Flats project.

**Comment 150-9c:** These areas should be managed for No Surface Occupancy through Conditions of Approval (COAs) attached at the APD stage. The BLM should be prepared to compensate Operators for any "taking" which may accrue for the post-hoc attachment of the COAs, which should be mandated through the DFEIS

.

**Response:** Leasing stipulations are imposed at the time the lease is sold. Appendix I Part 5 of the Great Divide RMP details conditions where "no surface occupancy" will be applied. Addition of further constraints or expanded areas of no surface occupancy are outside the scope of this EIS. The BLM doesn't expect any "takings" relative to lease rights to occur under the DFPA.

**Subheading IX: Wilderness Resources are Inadequately Protected Under All Alternatives**

***Refer to BLM Policy 150-10 for the following responses.***

**Comment 150-10a:** The BLM chose not to consider protecting the proposed wilderness set for(th)(sic) in the Citizen's Wilderness Inventory of Adobe Town and the Western Heritage Alternative for the Great Divide RMP within the DEIS on the basis that it would be more appropriate to address within the BLM's land use plan review process. Further it was determined that it would not be appropriate to delay the EIS for this project while such a land use review is undertaken.

**Response:** In a letter addressed to Erik Molvar of the Biodiversity Conservation Alliance, dated February 5, 2002, the BLM responded to a proposal from then Biodiversity Associates entitled "A Citizen's Wilderness Inventory of Adobe Town". The BLM's response, in part was:

> "The on-going oil and gas development within the Citizen's Proposal is consistent with the Great Divide Record of Decision and Approved Resource Management Plan, November 1990, the Green River RMP, August 1997. Oil and gas development is also consistent with the Mulligan Draw Gas Field Project Record of Decision and the Continental Divide / Wamsutter II Natural Gas Project Record of Decision. The majority of federal lands within the Citizen's Proposal have existing oil and gas leases (see map 2). Therefore, your proposal to place a moratorium on future oil and gas development is not consistent with the Great Divide RMP, the Green River RMP, or current policy or regulation. Your proposal to designate the area within the Citizen's Proposal a WSA is also inappropriate at this time without the supporting analysis and documentation developed through the land use planning process."

The same condition and situation applies today.

**Comment 150-10b:** Therefore, protection of lands encompassed in the Citizen's Proposal must be considered as part of the DEIS for Desolation Flats.

**Response:** Protection of lands encompassed in the Citizen's Proposal in the DFPA is detailed in Chapter 2, part 2.6 "Alternatives Considered but Eliminated from Further Detailed Study" section 2.6.1 "Expanded Wilderness Alternative."

**Comment 150-10c:** We request that BLM grant all public lands within the Haystacks portion of the citizens wilderness inventory be granted WSA status and be withdrawn from all drilling, road, or pipeline construction as a Condition of Approval for APDs under the Desolation Flats project until such time as Congress can reach a final decision to either grant it wilderness status or release it from wilderness consideration.

**Response:** Granting wilderness status to any areas within the DFPA is outside the scope of the Desolation Flats EIS. Also, please refer to our response to 150-10b.

**Comment 150-10d:** In the interim, BLM should actively pursue a program of land swaps in order to free up the potential wilderness from private inholdings.

**Response:** Pursuing a program of land swaps is outside the scope of the Desolation Flats EIS process.

**Comment 150-10e:** Once an oil and gas road is reclaimed to the BLM's satisfaction following a project like Desolation Flats, how can it be considered a "road"?

**Response:** The purpose of reclamation is to remove the "road". There is a risk that once a road is reclaimed, before it is thoroughly re-vegetated it could be used as a two-track route, however the purpose of road reclamation following abandonment is to eliminate the road as route for vehicles and restore the land to its original condition.

**Comment 150-10f:** The roads and wells of the Desolation Flats projects should be kept out of this portion of the proposed wilderness as well.

**Response:** Please refer to our response to comment 10a.

**Comment 150-10g:** The BLM agreed that this area indeed possesses the characteristics of wilderness, and thus Conditions of Approval should be attached to all APDs under the Desolation Flats project protecting this area from surface disturbance.

**Response:** Please refer to our response to comment 10a and 10b.

**Comment 150-10h:** FLPMA requires that the BLM manage its resources, including wilderness-quality lands (both Congressionally-designated and otherwise); the Desolation Flats Draft EIS attempts to duck this requirement, which leaves the document legally deficient.

**Response:** Please refer to our response to comments 10a and 10b.

**Comment 150-10i:** In addition, the BLM should extend the same interim protections to other portions of the citizen's proposal in order to maintain a full range of alternatives I the Great Divide RMP revision.

**Response:** Please refer to our response to Comment 10a and 10b.

**Comment 150-10j:** --Furthermore, the DFEIS seems to imply that applications would be approved following the ROD issuance on the revised Great Divide RMP regardless of outcome. The wording should be altered to indicate that applications may be denied or altered to conform to the new Great Divide RMP.--The wording should be altered to indicate that applications may be denied indefinitely or altered to conform to the new Great Divide RMP.

**Response:** Approval of APDs following the ROD for the Great Divide RMP within the Rawlins Field Office administrative boundary will be consistent with the ROD for the new RMP. Please refer to our response to comment 2a.

**Comment 150-10k:** Why is there no alternative that would not entail significant impacts to wilderness and recreation analyzed in the DFEIS? This marks a failure by the BLM to analyze an adequate range of reasonable alternatives, because complete protection for wilderness resources is certainly a reasonable alternative.

**Response:** This is detailed in section Chapter 2, section 2.6.1 "Expanded Wilderness Alternative".

**Comment 150-10l:** In short, the BLM is considering NO ALTERNATIVE which would not adversely impact the wilderness qualities of the adjacent Adobe Town WSA, let along the citizen's proposed wilderness that lies within the DFPA, in its range of alternative. This failure constitutes an egregious violation of NEPA's requirement to analyze a range of reasonable alternatives.

**Response:** Please refer to our response to comment 10k.

**Subheading X: The Powder Rim Proposed ACEC and Associated Winter Ranges Must Receive Full Protection from Surface Disturbances.**

***Refer to BLM Policy 150-11 for the following responses.***

**Comment 150-11a:** These juniper woodlands and the juniper obligate songbirds that depend on them, will receive adequate protection if the BLM chooses to place big game crucial ranges and the Powder Rim proposed ACEC off-limits to disturbance for the purposes of this project.

**Response:** Wildlife mitigations for crucial big game winter range is detailed in Chapter 2, section 2.5.2.11.2 entitled "Resource Specific Requirements" page 2-38. Effects of the proposed action are discussed in Section 4.7.3.1.1 entitled "General Wildlife". For birds effects are discussed in the first paragraph. Alternative A is discussed in Section 4.7.3.2 and discloses that effects from this alternative are expected to be identical to the proposed action, but proportionately higher because of the greater number of well pads and post-reclamation disturbance. There is no Powder Rim ACEC, nor is one under consideration at this time.

**Subheading XI: Assertion: The Monument Valley Management Area Should be Protected from Drilling.**

***Refer to BLM Policy 150-12 for the following responses.***

**Comment 150-12a:** The Monument Valley Management Area (MVMA) was identified as a possible Area of Cricital Environmental Concern (ACEC) under the Green River RMP, with the stipulation that conferring ACEC status would be evaluated at a later time. The Desolation Flats project would allow full-field development at 640-acre spacing in the MVMA.

**Response:** The GRRMP delayed consideration of the MVMA or portion thereof for designation of ACEC until inventories could be completed in order to determine whether ACEC relevance and importance criteria for ACEC designation are met. Management objectives and actions state the area is open to consideration for mineral leasing, exploration and development

provided mitigation can be applied to retain the resource values. All public lands within this portion of the MVMA are leased and each federal lease provides for approval of an acceptable plan of development. Acceptable plan criteria for the affected public lands were determined by the RS IDT members and included as Appendix A in the EIS.

**Comment 150-12b:** Hunters would be adversely impacted by the full-field development as proposed in the DEIS.

**Response:** The decision to implement the Mulligan Draw project remains full force and effect and allows up to 13 wells at 640 acre spacing within this portion of the MDPA which overlies a portion of the DFPA and MVMA. The Proposed Action as well as Alternative A could allow an additional 13 well locations in this portion of the MVMA.

Although some hunters could be displaced by activity within the portion of the MVMA that overlies the DFPA, hunting would not be precluded.

**Comment 150-12c:** Visual resources in the MVMA would be impacted by the proposed project.

**Response:** The EIS recognizes that visual impacts would occur on public lands within this area. However, any visual intrusion from approved activities located on public lands would be subject to the acceptable plan criteria outlined in Appendix A as well as be designed to blend into and retain the existing character of the landscape to the extent possible.

**Comment 150-12d:** The checkerboard status of surface ownership does not abrogate the BLM's responsibility to maintain the MVMA visual resources standards. The fact of private inholdings is therefore irrelevant to the protective measures required under the GRRMP.

**Response:** The BLM disagrees with the contention that private in holdings are irrelevant. The BLM is mandated to provide for ingress to privately held lands and minerals. Additionally, the decisions in the Green River Resource Management Plan apply only to public lands and minerals administered by the BLM.

**Comment 150-12e:** Impacts to visual resources are equally high under the "No Action" alternative as the Proposed Action.

**Response:** The alternatives considered in the analysis recognize management mandates for public lands located within checkerboard lands found in the RSFO portion of the DFPA.

**Subheading XII: Wildlife**

***Refer to BLM Policy 150-13 for the following responses.***

**Comment 150-13a:** The DFEIS provides,

> "If development occurs in areas of overlapping wildlife resource concerns, mitigation measures for each individual resource would be implemented."

DFEIS at 4-56. This distinction could not possibly be more arbitrary and capricious, because the converse would be that if an area is of wildlife resource concern for only one species, then mitigation measures will not be implemented.

**Response:** The converse of the statement quoted above is that when an area has wildlife concerns for only one species, then mitigation measures will be implemented only for the species of concern. The first full sentence of page 4-57 states:

> "All appropriate mitigation measures for the corresponding wildlife resources that are disturbed within a section would be implemented."

**Comment 150-13b:** Mitigation measures should be applied to every acre of sensitive wildlife habitats regardless of whether it also happens to be a crucial habitat for a second or third species.

**Response:** Please refer to our response to comment 13a.

**Comment 150-13c:** The BLM should clarify in the FEIS that wildlife mitigation measures will indeed be implemented on every acre of sensitive wildlife habitat, not just in areas where sensitive habitats for two different species overlap.

**Response:** Please refer to our response to comment 13a.

**Comment 150-13d:** Obviously, if those areas that are not overlapping and yet are of high wildlife concern for one species are not granted mitigation measures, then significant impacts would implicitly be expected. These impacts constitute unnecessary and undue degradation in light of the availability of mitigation measures of nominal inconvenience to the Operators.

**Response:** Please refer to our response to comment 13a.

**Comment 150-13e:** Seasonal stipulations for surface disturbance are proposed for important big game winter habitat, sage grouse and sharp-tail leks and crucial winter range, and raptor nests. DFEIS at B-1, B-2. These seasonal stipulations are insufficient in and of themselves, as the do no prevent roads and wells from being sited in sensitive habitats when the animals are not present, thereby degrading habitat quality during the crucial season.

**Response:** Chapter 4 of the EIS, at 4.7.3.1.2 explores in depth anticipated effects on big game, including Pronghorn Antelope (4-60 to 4-61, Mule Deer (4-61 to 4-62), and Elk (4-62 to 4-63). White tailed Deer are not expected to have any impacts. For all three species mitigations are expected to minimize impacts and long-term adverse impacts are not expected. For greater sage-grouse, please refer to our response to comment 22b. For raptors, please refer to our response to comment 19b.

**Comment 150-13f:** But in addition to this important shortcoming, seasonal stipulations are essentially meaningless because waivers are almost always approved on request. For all wildlife species, waivers to seasonal protections under the Desolation Flats project would be available at the Operator's request and the approval of the Authorizing Officer. DFEIS at B-1, B-2. The BLM's pathetic record of waiving these seasonal restrictions is a dismal proof that they are essentially voluntary and meaningless: Last winter, the Pinedale Field Office granted 38 of 42 exceptions (over 90%), Rock Springs Field Office granted 9 of 11 exceptions (82%), and the Rawlins Field Office granted 12 of 16 exceptions (75%). If the BLM is going to grant most exceptions to these seasonal stipulations, then major effects impacts to wildlife on sensitive ranges will continue to occur, and the mitigative value of these seasonal stipulations is voided. For these reasons, prohibitions on surface disturbance, rather than seasonal stipulations, are the minimum protections needed on sensitive wildlife habitats.

**Response:** First of all the terminology used is incorrect. There are two different types of seasonal restrictions. The first is in the form of a lease stipulation. A stipulation modifies standard lease rights and is made part of the lease document. Lease stipulations can be excepted, waived, or modified, per the regulations found at 43 CFR 3101.1-4. These lease stipulations are carried forward as part of the site-specific authorization, if applicable, as a COA attached to the APD. However, not all seasonal restrictions are lease stipulations. As a result of the environmental analysis conducted prior to authorizing an APD protective seasonal measures are also attached as a COAs. Waivers and modifications are substantial or permanent changes to the lease itself, and do not pertain to COAs. Exceptions do not change lease terms and address short term changes. Exceptions are also granted on COAs added to APDs as a result of environmental analyses. These too are short term changes. Generally exceptions are site-specific, for example may apply to only one well location, while the stipulation continues in other portions of the lease or nearby wells/activities, and are generally granted for only a short period of time when conditions allow it. The comment as presented does not reflect the true picture of how BLM protects wildlife species through use of seasonal restrictions. Considering the percentage of approved activity not occurring during times of seasonal restrictions would give a more accurate picture of BLM's efforts to protect wildlife and their habitats during critical periods.
Page B-3 on the DEIS, second paragraph states:

> "Exception, waiver, or modification of requirements developed from this guideline must be based upon environmental analysis of proposals (e.g., activity plans, plans of development, plans of operations, applications for Permits to drill) and, if necessary, must allow for other mitigation to be applied on a site-specific basis."

Exception requests when received are reviewed as needed by interdisciplinary specialists and the effects assessed. Interested agencies, such as the Wyoming Game & Fish Department are consulted as appropriate, and approval of requests occur when adherence to mitigation guidance is determined. Often, prior to submission of a request, operator desire to request an exception is discussed informally with BLM specialists to determine if such a request is possible. The request and alternatives are discussed and informal observations made. Proposals that cannot be approved on their face, or which the operator can't modify, or which consultation reveals undesirable impacts are denied. Most are approved because an exception request doesn't generally come forward for consideration until they appear to be an approvable request.

**Comment 150-13g:** Oil and gas development is occurring at a breakneck pace all across the Red Desert, and yet the DFEIS completely ignores the cumulative effects of the massive roading, habitat fragmentation, construction, and increased activity on the Red Desert's native wildlife.

**Response:** As detailed in Chapter 5 "Cumulative Impacts Analysis", potential cumulative impacts are assessed at the resource level in the DEIS. Cumulative effects to wildlife are detailed in section 5.3.7 "Wildlife".

**Comment 150-13h:** Thus, a credible cumulative impacts analysis is needed on the basis of the ecological needs of wildlife on a regional scale.

**Response:** The Desolation Flats EIS assesses environmental impacts within an area of approximately 234,000 acres, including cumulative impacts as detailed in our response to 13g. Impact assessment on a regional scale is outside the scope of the Desolation Flats EIS.

**Comment 150-13i:** NEPA does not allow the agency to skip a cumulative impacts analysis on the basis that agency personnel believe (in the absence of any scientific support, we might add) that mitigation measures are adequate to prevent cumulative impacts.

**Response:** Please refer to our response to comment 13g.

**Comment 150-13j:** Thus it is impossible to quantify or even estimate impacts to any wildlife species, because the agency has no idea to what degree and with what intensity impacts will occur in crucial habitat for a given wildlife species. Thus, the BLM is completely unable to provide the "hard look" required by NEPA and must go back to the drawing board, presenting a full disclosure of locations of site disturbances and a credible evaluation of subsequent impacts for each wildlife species.

**Response:** Please refer to our responses to comments 3a and 3b.

**Subheading XIII: Habitat Fragmentation**

***Refer to BLM Policy 150-14 for the following responses.***

**Comment 150-14a:** …we urge the BLM to adopt a new Proposed Action that uses directional drilling and well clustering to minimize habitat fragmentation, and thus avoid the unnecessary and undue degradation of lands and resources inherent to the current proposed action.

**Response:** Please refer to our response to comment 6a.

**Comment 150-14b:** This massive habitat fragmentation is largely preventable through clustering many wells per well pads and drilling directionally; habitat fragmentation on the scale proposed in the Desolation Flats project is therefore unnecessary and undue degradation of the lands and resources in the DFPA. The BLM must choose an alternative course of action that does not entail this massive damage to landscapes and habitats.

**Response:** Please refer to our response to comment 6a for well pad clustering and directional drilling. The BLM will choose an alternative and disclose it with the supporting rationale in the Record of Decision, when it is made.

**Comment 150-14c:** Although the portion of the landscape physically disturbed by roads, wellpads, and pipelines is often a relatively small percentage of the overall landscape, GIS analysis of full field oil and gas development incorporating quarter-mile buffers to account for habitat degradation due to edge effects indicates that almost 100% of lands within a fully developed gas field are degraded (Weller et al. 2002). In this way, the development of an oil and gas field results in widespread habitat destruction that extends well beyond the acreage of roads and wellpads that are bulldozed in.

**Response:** BLM has not been able to estimate the extent of "edge" effects because at this time we do not know precisely where all roads, wellpads, and disturbances will occur. Edge effect is an impact. Habitat degradation from "edge" effects is disclosed in the Desolation Flats EIS. Effects on wildlife and habitats anticipated from the Desolation Flats project are disclosed in Chapter 4. Wildlife and Special Status Plant, Wildlife and Fish Species effects are detailed in section 4.7 and 4.8. Effects on vegetation and wetlands are in section 4.5 and effects to range and other land uses are in section 4.6.

**Comment 150-14d:** With this in mind, the BLM must analyze the effects of the intensive fragmentation of sagebrush Steppe by roads and wellpads, the effects of this fragmentation on shrew dispersal, the degree to which shrew populations would be split in small metapopulations, and the effects that such population shifts would have on vulnerability to inbreeding, stochastic disturbance events such as adverse weather or disease outbreaks, predation, and ultimately to the overall viability of shrew populations and meta populations.

**Response:** The Desolation Flats DEIS discloses in Chapter 3, part 3.8.1.3 "Special Status Plant, Wildlife, and Fish Species" on page 3-71 under "Mammals" that ten sensitive mammal species may potentially be found on the DFPA. The dwarf shrew is one of those. Of the ten species only one is known to be present, the white-tailed prairie dog. It is likely that the dwarf shrew is present within the DFPA. Chapter 4, (page 4-82, Proposed Action, Page 4-87, Alternative A, Page 4-89, no action) under "Wildlife" states that a small percentage of habitat proposed for disturbance within the DFPA under the Proposed Action in not expected to significantly impacts dwarf shrews, if they are present.

**Comment 150-14e:** The BLM must analyze the increase in predation on burrowing owls for all alternatives and reach conclusions about burrowing owl population dynamics that are supported by science.

**Response:** Western Burrowing Owls are known to be present within the DFPA. Effects on the Western burrowing owl by alternative are listed at Proposed Action page 4-83, alternative B 4-88, no action at page 4-89.

**Comment 150-14f:** The BLM has failed to conduct sufficient analysis of these impacts to warrant such a conclusion.

**Response:** Impacts to the Sage Sparrow, Brewer's Sparrow and Sage Thrasher are on page 4-83 for the Proposed Action. Alternative A effects are discussed on pages 4-87 and 4-88. The BLM believes that due to the abundance of suitable habitat present no significant impacts to this species are expected and sufficient analysis has been conducted.

**Comment 150-14g:** In light of these scientific findings the BLM must take the following steps in order to satisfy NEPA's requirements of a credible scientific analysis and hard look: (1) map the locations of all roads, pipelines, and well sites for the project in relation to the sagebrush steppe habitat found within the DFPA; (2) buffer all surface disturbing areas with a 100 m buffer and subtract this area from available sagebrush habitat; (3) analyze the size of remaining blocks of sagebrush habitat; (4) present this post-disturbance acreage of sagebrush habitat available to sage brush obligates passerines; and (5) then, and only then, analyze the population-levels effects of the Desolation Flats project on sagebrush obligate birds and present these results in the FEIS prior to reaching a decision on the project.

**Response:** As new roads, pipelines and well site locations are proposed by the operators, the BLM will review the proposals under NEPA with site specific EA's tiered to the Desolation Flats Record of Decision and in turn issue a decision record and apply mitigations for those proposals. That, coupled with the environmental analysis in the Desolation Flats analysis and decision will be sufficient to satisfy NEPA requirements. Site specific decisions will be tiered to the Desolation Flats EISs and Record of Decision and will be separate from the EIS process. Please refer to our response to comment 3a.

**Subheading XIV: Big Game Ranges and Calving Areas**

***Refer to BLM Policy 150-15 for the following responses.***

**Comment 150-15a:** As a result, winter ranges should be closed to all road-building and drilling activity year-round.

**Response:** The Desolation Flats EIS at pages 2-38 details several mitigations are described. For big game, no disturbance would occur in habitats designated as crucial big game winter range between November 15 and April 30. The remainder of the year these areas do not serve as crucial winter range normally and disturbance would have the effects described in Chapter 4. In addition, within big game crucial winter ranges, disturbance would be placed so that specific important vegetation types, as identified by the BLM, would be avoided where possible in order to reduce impacts to big game in crucial winter range.

**Comment 150-15b:** The BLM claims that each alternative in the DFEIS would result in "NSI {No Significant Impact} w/ mitigation" with regard to big game crucial winter ranges. DFEIS at 2-46. This is a completely unsupported and unsupportable assertion. Does the BLM argue new roads and wellpads in the heart of crucial winter range will have no impact on these ungulates?

**Response:** The effects BLM expects to result from the adoption of the various alternatives are detailed in Chapter 4 of the EIS. Effects are anticipated, however they are not expected to be significant.

**Comment 150-15c:** That increased traffic from snowplows and well maintenance, as well as noise from well operations, will not stress wintering animals or drive them away from optimal winter ranges and onto marginal habitat, where condition and chances for survival for the animals are degraded?

**Response:** Please refer to our response to comment 15b.

**Comment 150-15d:** The BLM's argument that no significant impacts will accrue from such actions ignores a large and unequivocal body of scientific evidence that contradicts this conclusion. The BLM's failure to take account of this evidence is a violation of NEPA's requirement that each EIS be held to a high standard of scientific integrity.

**Response:** The BLM's assertion that no significant impacts will accrue from such actions arises from the information disclosed in the DEIS, especially Chapter 4. The information in the EIS was gathered and prepared in compliance with NEPA by an interdisciplinary team of professional resource specialists using their best professional judgment in an integrated approach, as provided for in 40 CFR 1502.6. In addition numerous scientific references and citations are made throughout the document where appropriate.

**Comment 150-15e:** These candid assessments of the continuous level of vehicle traffic which would occur within crucial winter range if development were to occur within or nearby this sensitive habitat, and illustrate why oil and gas production facilities and access roads must never be sited on crucial winter ranges.

**Response:** As detailed on page 2-38, within big game crucial winter ranges, disturbance would be placed so that specific important vegetation types, as identified by the BLM, would be avoided where possible in order to reduce impacts to big game in crucial winter range.

**Comment 150-15f:** The BLM has failed to analyze the effects on increased vehicle traffic as well as snow-plowing that occurs on existing roads as a result of the new and increased level of development associated with the 385 new wells.

**Response:** The EIS in Chapter 4 states that with the use of BLM road standards, RMP stipulations, operator proposed mitigation measures, preconstruction planning and the site layout process described in Section 2.5.1 impacts to big game would be minimized in areas that contain sensitive resources.

**Comment 150-15g:** NEPA requires that the BLM take a "hard look" at impacts to wildlife, including the impacts of increased traffic and plowing on existing roads, and what this might mean to the survival and subsequent fecundity of elk and other ungulate utilizing crucial winter ranges. This analysis has not been done in the DEIS and must therefore be presented in the FEIS.

**Response:** Please refer to our response to comment 15f.

**Subheading XV: Elk**

***Refer to BLM Policy 150-16 for the following responses.***

**Comment 150-16a:** Thus, it is important to keep road construction out of crucial winter ranges to avoid displacing elk to marginal habitats at crucial times of the year."

**Response:** Please refer to our response to comment 15f.

**Comment 150-16b:** The maintenance of low road densities in important habitat areas is necessary to maintain healthy elk populations.

**Response:** As detailed on page 3-58 86.1 per cent of the DFPA is not classified as elk habitat. Of the remaining 4% are classified as year long, 9.1% winter year long range, and 0.8% is classified as crucial winter/year long range. As detailed on page 2-38, within big game crucial winter ranges, disturbance would be placed so that specific important vegetation types, as identified by the BLM, would be avoided where possible in order to reduce impacts to big game in crucial winter range.

**Comment 150-16c:** Thus, winter range areas should be withdrawn from the surface disturbance associated with oil and gas development.

**Response:** Please refer to our response to comments 15f and 16b.

**Comment 150-16d:** The BLM then waves its arms and makes a series of blatantly unsupported and unsupportable, statements.

**Response:** Supporting references are cited in Chapter 4, including section 4.7 and section 4.7.3.1.2 "Big Game".

**Comment 150-16e:** This series of statements is so contrary to the established science that it is baffling that the BLM could have reached a conclusion so out of touch with reality. This egregious analytical error discredits the BLM's scientific integrity and renders the EIS analysis on impacts to elk winter range completely worthless."

**Response:** Please refer to our responses to comments 16b, 15f, and 16d.

**Comment 150-16f:** The reduction of road densities on the winter ranges as a whole and the maintenance of low road densities in important habitat areas would aid in maintaining healthy elk populations.

**Response:** The BLM agrees with your statement, and feels the Desolation Flats EIS promotes such a condition.

**Subheading XVI: Mule Deer**

***Refer to BLM Policy 150-17 for the following responses.***

**Comment 150-17a:** Thus, due to the sensitivity of mule deer to disturbance on winter ranges and the crucial nature of winter range performance to maintaining healthy mule deer populations, mule deer winter ranges must be withdrawn from all road construction and development, particularly oil and gas development, which would increase the level of human disturbance on the winter ranges.

**Response:** Please refer to our response to comment 15f.

**Subheading XVII: Pronghorn**

***Refer to BLM Policy 150-18 for the following responses.***

**Comment 150-18a:** The mitigation measures in the DFEIS are insufficient to protect antelope populations in the Washakie Basin. Antelope of the Bitter Creek herd inhabiting the project area, are 41% below WGFD herd targets. DFEIS at 3-55. This indicates that this population is already stressed and should not be subjected to additional impacts to habitats, displacement from high-quality habitats, or additional physiological stress.

**Response:** In Chapter 4 of the EIS, under 4.7.3.1.2 “Big Game”, at “Pronghorn Antelope” it is stated:

> “The application of mitigation described in Section 2.5.2.11.2 and 4.7.5 would minimize impacts, and long term adverse effects to pronghorn are not expected.”

**Comment 150-18b:** This means keeping all surface disturbances off of pronghorn crucial winter range to avoid disturbance during the crucial winter season.

**Response:** Chapter 2 of the EIS, page 2-38 lists mitigation guidelines for wildlife. The first mitigation listed reads:

> “No disturbance would occur in habitats designated as crucial big game winter range between November 15 and April 30.”

**Comment 150-18c:** “Nothing less that a prohibition of surface disturbing activities on crucial winter ranges actually minimizes the probability of adverse impacts.

**Response:** Please refer to our response to comment 18b.

**Comment 150-18d:** On crucial winter ranges, such vehicular activity in the midst of crucial winter range would potentially displace antelope from preferred habitats and/or increase the

stress levels and metabolic expenditures for individual animals, either of which results in an elevated probability of over winter mortality or reduced fawn viability the following spring.

**Response:** Please refer to our response to comment 18b.

**Comment 105-18e:**

> "Disturbance of seasonal pronghorn ranges within the DFPA is not likely to reduce pronghorn carrying capacity within the Bitter Creek herd unit." DFEIS at 4-60.

This claim is baseless and unsupportable. There are no scientifically credible studies (published in peer-review journals) that indicate that oil and gas development on pronghorn winter ranges are without effect on pronghorn populations.

**Response:** The Desolation Flats EIS does not claim there is no effect on pronghorn antelope from this proposal, it states that pronghorn antelope carrying capacity is not expected to be reduced. Also, please refer to our response to comment 18b.

**Comment 150-18f:** In (sic) this climate of uncertainty, the BLM has the responsibility to protect pronghorns from impacts of unknown magnitude, rather than find out later that oil and gas development on crucial winter ranges does indeed cause a major decline in herd populations.

**Response:** Please refer to our response to comment 18b.

**Subheading XVIII: Ferruginous Hawks and Other Raptors**

***Refer to BLM Policy 150-3 for the following responses.***

**Comment 150-19a:** As a result, ferruginous hawks are of special concern and deserve the strongest protection available in the context of this project.

**Response:** The BLM agrees with this assertion and believes this project as proposed under any alternative meets this goal. The ferruginous hawk is listed as a "sensitive wildlife species" in the table on page 3-73, "Wildlife Species".

**Comment 150-19b** Thus, the BLM should establish adequate nest buffers (a minimum of 1 mile in diameter for all species, with larger buffers for ferruginous hawk around nest sites, preventing all construction of developments (such as wells and roads) that would lead to future disturbance of nesting raptors through focusing human activities in these areas.

**Response:** Mitigations for the protection of raptors, including ferruginous hawks, are detailed in Chapter 2, part 2.5.2.11.2 "Resource-Specific Requirements", page 2-38, in Chapter 4 part 4.7.5 "Additional Mitigation Measures", in 4.7.5 "Additional Mitigation Measures", and in Appendix H, "Wildlife Monitoring Plan". Mitigations provide for a 1 mile no disturbance zone for active raptor nests of listed or sensitive species during the critical nesting season (Feb.01-July 31) each year and a ¾ to ½ mile (depending on species or line of sight) for other raptor species. In addition No permanent above ground structures would be constructed within 300m or less, depending upon species and/or line of sight, of any raptor nest, on a site specific basis. Where the take of a raptor nest is unavoidable, the erection of 2 replacement artificial nesting structure may be required by the BLM.

**Comment 150-19c:** Seasonal restrictions are insufficient; a well or road constructed outside the nesting season is still likely to lead to nest abandonment or reductions in recruitment due to disturbance from vehicle traffic that does not occur during the nesting season.

**Response:** For the proposed action and alternative A, with implementation of mitigation measures in Sections 2.5.2.11.2 and 4.7.5 development of the proposed action would not significantly impact raptors, including the ferruginous hawk. Potential effects on raptors are detailed in 4.7.3.1.5 "Raptors". With implementation of mitigation measures, significant impacts are not expected in areas of overlapping resources. Given the application of mitigation measures, significant impacts to raptor nesting activities are not expected. Implementation of the proposed action is not expected to produce any appreciable long-term negative changes to the raptor prey base within the project area. Overall, significant impacts to raptors utilizing the DFPA are not expected (DEIS, page 4-68).

**Comment 150-19d:** Thus, a minimum of 1-mile buffers prohibiting surface disturbance should apply to ferruginous hawk nest sites as well as all other raptor nest sites.

**Response:** Please refer to our responses to comments 19b and 19c.

**Comment 150-19e**: Raptor nest buffers presented in the DFEIS are completely insufficient. Surface-disturbance activities, such as well, road, and pipeline construction, would be allowed as close as 1,200 feet from active ferruginous hawk nests and 825 feet of the nests of other raptor species, as long as construction activities occur outside the nesting season.

**Response:** Please refer to our responses to comments 19b and 19c.

**Comment 150-19f:** The 0.5 to 1-mile buffer zones around active raptor offer only seasonal protections and apply only to construction activities (see DFEIS at H-16); vehicle traffic, maintenance, and production activities can and will occur within a quarter mile of active raptor nests during the nesting season, with a strong likelihood of disturbing nesting raptors, causing temporary and/or permanent nest abandonment, and leading to the deaths of eggs and/or nestlings in the process. This is an unacceptable state of affairs, constitutes "unnecessary and undue degradation" to these wildlife populations, and therefore constitutes a violation of FLPMA.

**Response:** Please refer to our responses to Comments 19b and 19c. The proposed action and alternatives with stated mitigations as appropriate are consistent with the provisions of FLPMA.

**Comment 150-19g:** It is all well and good to prevent construction near nest sites while the hawks are present, but nests are used traditionally from year to year, and if a road or well site is constructed near a nest during the off-season, that nest site will be rendered non-viable the following year when the hawks return to their nesting territory.

**Response:** There is a detailed discussion of anticipated effects from the proposed action in the last paragraph of page 4-67, including a discussion of mitigation measures and those cases where a "take" of a raptor nest might occur. The DEIS states:

> "Given the application of these mitigation measures, significant impacts to nesting activities are not expected."

**Comment 150-19h:** Thus, historic as well as active nests deserve a strong degree of protection for traffic-related surface disturbances. The BLM must emplace solid, year round

protections that prevent the construction of roads and well-sites, which will inherently receive regular vehicle traffic throughout their productive lifetimes, regardless of nesting seasons, within 1 mile of ferruginous hawk nests, both active and historic.

**Response:** Please refer to our response to 19g. In addition, impacts to ferruginous hawks are discussed on page 4-85 (Proposed Action) and on page 4-88 (Alternative A).

**Comment 150-19i**: In addition, mitigation measures in section 4.7.4.1.6 are once again referenced, and yet no such section can be found in the DFEIS.

**Response:** The appropriate Section can be found at 4.7.3.1.5.

**Comment 150-19j**: The take of even inactive nests must therefore be done outside the nesting season and with the full involvement of the USFWS.

**Response:** The "take" of inactive nests is discussed in part in the last paragraph of page 4-67 of the DEIS. Further discussion of "take" can be found in page H-17 of the "Wildlife Monitoring Plan", Appendix H, including the need to consult with and obtain permits from US Fish and Wildlife Service. "Take" is also mentioned in Chapter 2, page 2-38, "Project Wide Mitigation Measures", and details that all appropriate permits would be acquired when necessary.

**Comment 150-19k:** The overall landscape-scale effects of widespread industrialization threaten the viability of raptor populations through habitat loss and fragmentation. Nest buffers currently in force are unlikely to safeguard the viability of native raptors in the Great Divide; a more conservative approach is needed to order to safeguard raptor viability in this region.

**Response:** Please refer to out responses to 19b and 19c.

**Comment 150-19l:** Thus, not only should nest buffers be implemented, but the overall integrity of the landscape should be maintained (or improved in areas where it is currently degraded) in order to better provide for raptor viability.

**Response:** Please refer to out responses to 19b and 19c.

**Subheading XIX: Burrowing Owls**

***Refer to BLM Policy 150-19 for the following responses.***

**Comment 150-19m:** First of all, the BLM should make the aforementioned burrowing owl surveys mandatory, rather than something the Operator "should" do.

**Response:** The text has been corrected to read "will" instead of "should".

**Comment 150-19n:** We were unable to locate a section 4.7.4.1.6.

**Response:** The appropriate Section can be found at 4.7.3.1.5.

**Comment 150-19o:** …urge the BLM to implement a 1-mile buffer of no surface disturbance around any active or known burrowing owl nest, and not to allow activities within the buffer after

the owls have departed the nest, in order to maintain the viability of nest site locations from year to year and to prevent active nest sites from being impacted during the off-season.

**Response:** Please refer to our responses to comments 19b and 19c.

**Subheading XX: Peregrine Falcon**

**Comment 150-20:** With this information in mind, the BLM should re-examine its analysis of impacts to peregrine falcons in the FEIS.

**Response:** As detailed in the DEIS at 4-84, "Peregrine Falcon", there is a lack of suitable habitat within the Desolation Flats project area.

**Subheading XXI: Wolves**

***Refer to BLM Policy 150-3 for the following responses.***

**Comment 150-21a:** There is no analysis of the effects of the Desolation Flats project on the dispersal or recovery of gray wolves in the southern Red Desert in the DFEIS.

**Response:** As detailed on page 4-73, under "Threatened, Endangered, or Proposed for listing Species of Plants, Wildlife, and Fish", the gray wolf is not listed by the Fish and Wildlife Service as a species that occurs within the Desolation Flats Project Area.

**Comment 150-21b:** The BLM must initiate a Section 7 consultation with the USFWS concerning the possible impacts to the Desolation Flats project on dispersing wolves (and also the potential of eventually wolf colonization of the DFPA). The BLM must also present a credible impacts analysis of the effect of full-field development on wolf recovery in this area.

**Response:** Please refer to our response to comment 150-21a above.

**Subheading XXII: Sage Grouse**

**Comment 150-22a:** We urge the BLM to comply with all of Dr. Brauins expert recommendations regarding sage grouse in the FEIS.

**Response:** BLM believes the mitigation measures proposed for the DFPA, and as detailed in the DEIS are sufficient to protect the greater sage-grouse in the DFPA. Please refer to our response to comment 150-6e. 4.7.3.1.4 "Upland Game Birds" page 4-67 states in part:

> "Through seasonal closures, reclamation, avoidance, and mitigation measures, significant impacts to the greater sage grouse population would not be expected to occur as a result of implementation of the Proposed Action."

**Comment 150-22b:** It is crucially important that the Desolation Flats project include stronger mitigation measures to provide for the maintenance and recovery of sage grouse populations, because this bird is headed for the Endangered Species List if population losses continue.

**Response:** Please refer to our response to comment 150-6e. 4.7.3.1.4 "Upland Game Birds" page 4-67 states in part:

> "Through seasonal closures, reclamation, avoidance, and mitigation measures, significant impacts to the greater sage grouse population would not be expected to occur as a result of implementation of the Proposed Action."

**Comment 150-22c:** But Clait Braun (pers. Comm..) the worlds most eminent expert on sage grouse, recommended even larger NSO buffers of 3 miles from lek sites, based on the uncertainty of protecting sage grouse nesting habitat with smaller buffers.

**Response:** Please refer to our response to comment 22b.

**Comment 150-22d:** Because leks sites are used traditionally year after year and represent selection for optimal breeding and nesting habitat, it is crucially important to protect the area surrounding lek sites from impacts. Thus, the prohibition of surface disturbance within 2 miles (minimally) or 3 miles (optimally) of a sage grouse lek is the absolute minimum starting point for sage grouse conservation.

**Response:** Please refer to our response to comment 22b.

**Comment 150-22e:** These measures are clearly insufficient, because they would allow construction of roads and well pads in the area between ¼ and 2 miles of the lek site, creating major impacts to sage grouse during the crucial nesting season.

**Response:** Please refer to our comments to 22b. Further, on page 4-72 of the DF DEIS, BLM has proposed additional mitigation to avoid quality nesting habitat within 2-miles of a greater sage grouse lek. The analysis concludes implementation of this mitigation measure could further lessen the potential impact of reduced sage-grouse nesting success.

**Comment 150-22f:** A detailed study of nesting habitat use is therefore needed to identify all important nesting area in the FEIS, and NSO protective measures must be extended to all identified nesting areas.

**Response** Please refer to our response to comments 14g and 22b.

**Comment 150-22g:** Brood rearing habitats should thus be identified and managed to maximize sage grouse recruitment success through protective measures laid out in the FEIS.

**Response:** Please refer to our response to comment 22b.

**Comment 150-22h:** Additional measures are needed to protect sage grouse wintering habitat, for both severe winters and normal winters.

**Response:** Please refer to our response to comment 22b.

**Comment 150-22i:** The DEIS makes no attempt to identify sage grouse crucial winter ranges that are used during ordinary winters, merely the habitats that are used by grouse during exceptionally severe winters, which might come once or twice a decade.

**Response:** The Wyoming Game and Fish Department is currently assembling a map of sage grouse winter habitats for the Desolations Flats Area, but it has not been completed. During most years winter habitat for sage grouse is not a limiting factor in sage grouse populations.

During extreme winters with deep snow the severe winter relief areas depicted in Figure 3-14 become critical to sage grouse survival and should be protected.

**Comment 150-22j:** This is an unacceptable oversight on the part of the BLM, and the agency must identify grouse crucial winter habitat for ordinary winters in the FEIS and also provide protective measures that assure that this important habitat is not degrade by gas development or road-building.

**Response:** Please refer to our response to Comment 22b.

**Subheading XXIII: Wyoming Pocket Gophers**

**Comment 150-23a:** The BLM argues that the proposed full-field development of the DFPA will have "no significant impacts on this species" DFEIS at 4-82. From what analysis does the BLM derive this highly dubious conclusion?

**Response** The analysis of impacts to Sensitive species of plants wildlife and fish, including the Wyoming Pocket Gopher, are detailed in Chapter 4, including section 4.8.2 "Sensitive Species of Plants, Wildlife, and Fish."

**Comment 150-A23b:** No data are presented regarding expected effects of the project on mortality, recruitment, or behavior of this species that suggest that an industrial development on this massive scale would have no negative effect on Wyoming pocket gophers.

**Response:** Please refer to our response to comment 23a.

**Subheading XXIV: Mountain Plovers**

**Comment 150-24a:** Oil and gas development in nesting concentration areas is a direct threat to mountain plover population viability.

**Response:** For the proposed action, the DEIS, on page 4-75 states in part:

> "Mountain plovers often nest near roads, feed on or near roads, and use roads as travel corridors (USDI-FWS 1999), all of which make the species susceptible to being killed by vehicles."

Further on in the text, at page 4-76 it is stated:

> "Given the implementation of mitigation measures in Sections 2.5.2.11.2 and 4.8.1.4, no adverse effects to mountain plovers are expected."

Alternative A effects are discussed on page 4-78.

**Comment 150-24b:** In addition to these problems, wellfield development can lead to increased invasion rates of non-native weed species, which can have serious impacts on plover nesting habitat by decreasing the availability of the bare ground (Good et al. 2001).

**Response:** Mitigations for invasive/non-native species are detailed page 2-37 and 2-38 in Chapter 2. Further on in the text, at page 4-76 it is stated:

> "Given the implementation of mitigation measures in Sections 2.5.2.11.2 and 4.8.1.4, no adverse effects to mountain plovers are expected."

Alternative A effects are discussed on page 4-78.

**Comment 150-24c:** This lack of a hard requirement is both disconcerting and inadequate to protect nesting plovers. In addition, where plovers are found, construction activities would be postponed (but not halted) until 1 week post-hatching. This measure would guarantee that while plover nesting could continue during the construction season, plover nesting habitat would be destroyed for all future years, until such time that the project had ended (30-50 years in the future) and roads and wellpads were finally reclaimed. This is a major and significant impact in and of itself to plover nesting habitat.

**Response:** Disturbance of mountain plover nesting habitat is discussed on page 4-75. In Chapter 4, at page 4-76 it is stated:

> "Given the implementation of mitigation measures in Sections 2.5.2.11.2 and 4.8.1.4, no adverse effects to mountain plovers are expected."

Alternative A effects are discussed on page 4-78.

**Comment 150-24d:** The BLM claims that each alternative in the DFEIS would result in "NSI w/ mitigation" with regard to mountain plovers DFEIS at 2-46. This is completely unsupported and unsupportable assertion.

**Response:** This assertion is supported in Chapter 4, including on page 4-75 and 4-76 for the proposed action, and 4-78 for alternative A.

**Comment 150-24e:** In order to prevent significant impacts to plovers, the BLM must provide prohibitions on surface disturbance for all plover nesting concentrations within a ½ mile buffer to prevent elevated structures (which become raptor perches) from being constructed within sight distance of nesting concentration areas, and nearby roads becoming ecological traps for plover adults and their chicks.

**Response:** Mitigating measures for mountain plovers, including raptor perch inhibitors and spacing buffers are detailed in Sections 2.5.2.11.2 and 4.8.1.4 of the DEIS. Alternative A effects are discussed on page 4-78. In Chapter 4, at page 4-76 it is stated:

> "Given the implementation of mitigation measures in Sections 2.5.2.11.2 and 4.8.1.4, no adverse effects to mountain plovers are expected."

**Subheading XXV: Prairie Dogs**

**Comment 150-25a:** The importance of conserving the white-tailed prairie dog because it is imperiled, declining, and designated as a BLM Sensitive Species and because it is extremely important in supporting healthy populations of other imperiled, declining, and BLM Sensitive Species is completely overlooked, and the resulting analysis is inadequate.

**Response:** Mitigations for white-tailed prairie dogs are discussed generally in Chapter 2, and specifically on page 2-39. The presence of white-tailed prairie dogs and the affected environment are discussed in Chapter 3, especially on pages 3-71 and 3-73. Prairie dogs are also discussed in Chapter 4, especially on pages 4-74 and 4-82. The two sentences before your quotation (page 4-82) read:

> "If white-tailed prairie dog colonies that provide suitable black-footed ferret habitat are to be disturbed, then black-footed ferret surveys would be conducted (see section 4.8.1.2.1). It is preferred by the BLM that no disturbance occur within 50 meters of prairie dog colonies, where feasible."

**Comment 150-25b:** DEIS underestimates the likely impacts to white-tailed prairie dogs and associated species in several ways, and as a result, fails to take the requisite "hard look" at the potential environmental consequences.

**Response:** Please refer to our response to comment 25a.

**Comment 150-25c:** First, the BLM has no idea where these wells will be located.

**Response:** Please refer to our response to comments 3a and 3b.

**Comment 150-25d:** Second, the BLM makes the unsupported assumption that most impacts to prairie dogs will be temporary.

**Response:** Please refer to our response to comments 3a and 3b.

**Comment 150-A25e:** It seems impossible to support this statement without knowing where the disturbance is planned.

**Response:** The two sentences before your quotation (page 4-82) read:

> "If white-tailed prairie dog colonies that provide suitable black-footed ferret habitat are to be disturbed, then black-footed ferret surveys would be conducted (see section 4.8.1.2.1). It is preferred by the BLM that no disturbance occur within 50 meters of prairie dog colonies, where feasible."

Also, please refer to our response to comment 25a.

**Comment 150-A25f:** Thus the project could easily impact five generations of prairie dogs, which cannot be construed as a temporary effect for those populations."

**Response:** Expected effects on white-tailed prairie dogs are discussed in Chapter 4, especially on pages 4-74 and 4-82. It states at 4-82:

> "The anticipated disturbance of white-tailed prairie dog colonies is expected to be low, and no significant impacts to the white-tailed prairie dogs are expected."

**Comment 150-A25g:** Unfortunately, the vegetation that does become established is likely to consist of noxious weeds, which may permanently alter habitat quality.

**Response:** Chapter 4 on page 4-49, in the second to the last paragraph states:

> "However, with implementation of best management practices and proposed mitigation measures, including non-native species establishment and invasion monitoring and remediation, no significant impacts are anticipated"

**Comment 150-A25h:** Therefore, increased predation may result from shrub removal and this effect may also last for generations.

**Response:** Please refer to our response to comment 25f.

**Comment 150-25i:** While the DEIS does include increases in roadkills and illegal poaching as "principal wildlife impacts likely to be associated with the Proposed Action or alternatives" (p.4-56), it does not discuss these impacts in the General Wildlife section, and does not consider the fact that prairie dog shooting is legal and unregulated in Wyoming.

**Response:** Impacts to wildlife from road kills are discussed in the General Wildlife section for big game on page 4-59, for antelope on page 4-61, for mule deer on page 4-62, for elk on page 4-63, and for all species of wildlife in the Introduction on page 4-56. Prairie dog shooting is controlled by the Wyoming Game and Fish Department, and is outside the scope of the Desolation Flats DEIS. Text was added to Chapter 4 to disclose that increased shooter access to the DFPA could result in increased mortality to targeted species.

**Comment 150-25j:** In the absence of site-specific locations for road, pipeline, and well construction, the BLM has no way of knowing or accurately forecasting where disturbance will take place, and the agency is therefore in no position to speculate about the proportion of prairie dog colonies that would be subjected to full-field development with all its associated impacts. The BLM's conclusory statement on the lack of impacts to prairie dogs is therefore arm-waving in the absence of any credible data whatsoever, a wild guess with no scientific integrity or credibility. The BLM must rectify this absence of analysis by publishing the locations of proposed developments, quantifying the percentage of prairie dog colonies that would be impacted by oil and gas development (including roadkill mortality, increased predation due to the creation of raptor perches, and increased human-induced mortality through shooting and poisoning in response to increased vehicular access), and presenting a thorough analysis of these impacts on the viability of individual prairie dog colonies.

**Response:** For the absence of site specific locations and accurately forecasting where disturbance will take place, please refer to our response to comment 3a and 3b. For your assertion regarding the absence of credible data, the existing environment is detailed in Chapter 3, and relative to white-tailed prairie dogs (and black footed ferrets) on page 3-64 to 3-66. Further information is disclosed in Chapter 4, especially in 4.8.2 "Sensitive Species of Plants, Wildlife, and Fish", including the environmental effects of the proposed action. The BLM will publish the locations of proposed developments, quantify the extend and impacts of disturbance of prairie dog colonies, if any, in a thorough NEPA analysis in response to APD's submitted by the Operators on a site-specific basis tiered to the Desolation Flats Record of Decision.

**Comment 150-25k:** The DEIS also does not consider the long term impact that the presence of wells and other structures may have in providing perches for raptors, which may increase prairie dog predation.

**Response:** The Desolation Flats DEIS in Chapter 4, page 4-82 states in part:

> "If white-tailed prairie dog colonies that provide suitable black-footed ferret habitat are to be disturbed, then black footed ferret surveys would be conducted (see Section 4.8.1.2.1). It is preferred by the BLM that no disturbance occur within 50 meters of prairie dog colonies, where feasible."

On page 4-74, "Black-Footed Ferrets", the EIS states in part:

> "Adverse impacts to black-footed ferret habitat from implementation of the Proposed Action would be avoided by not allowing surface disturbance within 50 meters of white tailed prairie dog colonies."

The use of raptor perch preventers will be discussed in the Desolation Flats final EIS in more detail.

**Comment 150-25l:** Each of these omissions and miscalculations on the BLM's part contributes to the inaccurate assessment that impacts to white-tailed prairie dogs and associated species will be temporary, when the real result is likely to be long-term habitat conversion.

**Response:** Please refer to our responses to comments 25f through 25k.

**Comment 150-25m:** The few mitigation measures for white-tailed prairie dogs and their associates have no teeth—they are completely discretionary.

**Response:** Mitigation measures are discretionary—for the BLM, not for Operators. The Agency may choose to utilize mitigation measures as it deems appropriate, based on interdisciplinary review and input. Site specific NEPA will provide the basis for a review by the authorized officer, and when a choice is made by BLM that includes mitigation measures, implementation of the approved action is not discretionary for the operator.

**Comment 150-25n:** The BLM has settled for merely recommending avoiding disturbance on prairie dog colonies rather than clearly prohibiting disturbance in these areas, or at least giving some sort of framework explaining under what circumstances disturbance would be allowed.

**Response:** The Desolation Flats DEIS in Chapter 4, page 4-82 states in part:

> "If white-tailed prairie dog colonies that provide suitable black-footed ferret habitat are to be disturbed, then black footed ferret surveys would be conducted (see Section 4.8.1.2.1). It is preferred by the BLM that no disturbance occur within 50 meters of prairie dog colonies, where feasible."

The circumstances that would result in siting ground disturbing operations in prairie dog colonies could occur when no feasible alternative exists to locating the site in a prairie dog town.

**Comment 150-25o:** BLM should formally recognize in the FEIS that available oil and gas technologies, including directional drilling, allow such protections of prairie dog colonies to be feasible in all cases, without exceptions.

**Response:** There is a detailed discussion of directional drilling, including multi-well single pad designs occurs on page 2-14 and 2-17, including Figure 2-4 on page 2-16. The EIS states that when a surface location is not feasible to occupy for a variety of reasons, the Operators may use directional drilling to extract resources. BLM expects that directional drilling may be feasible in some cases, possibly even in many cases, but is not feasible in all cases.

**Comment 150-25p:** As the DEIS reads now, disturbing prairie dog colonies could be allowed at the whim of the Operator.

**Response:** Please refer to our response to comment 25m.

**Comment 150-25q:** The BLM has not presented evidence that habitat destruction and fragmentation coupled with increased mortality in these complexes which represent over 9900 acres of active white-tailed prairie dog colonies will not contribute to the need to list the white-tailed prairie dog under the ESA.

**Response:** The DEIS, in Chapter 3, page 3-65 discloses that 59 prairie dog colonies totaling 9,967 acres in extent are found in or near the DFPA. Of those colonies, 5,738 acres are actually within the DFPA. These colonies form two complexes where suitable habitat for black footed ferrets could exist. While suitable habitat seems to be present, black footed ferrets are not known to exist in the area. Habitat disturbance will be limited by the BLM to only those situations where there is no feasible alternative. The extent of habitat disturbance within the DFPA is expected to be small (page 4-82). In addition, please refer to our response to comment 25g.

**Comment 150-25r:** It (BLM) has not compiled information on population dynamics, current threats, or habitat needs for white-tailed prairie dogs. It has not evaluated the significance of these two complexes or how the proposed action would contribute to maintaining or restoring the white-tailed prairie dog. The BLM has not yet developed habitat or population management objectives for white-tailed prairie dogs at any scale—not for this project, not for Wyoming, and not range wide. Therefore, the BLM cannot ensure that approving this project is consistent with white-tailed prairie dog management objectives.

**Response:** The significance of the two prairie dog complexes is evaluated in Chapter 3, on page 3-65, and in Figure 3-15. Among the references cited are Hillman and Clark, 1980, Fagerston 1987, and Biggins, et al, 1989, USDI FWS 1989. The effects of the proposed action are disclosed in Chapter 4, especially on page 4-74 and page 4-82. Also in Chapter 4, on page 4-81 at 4.8.2, the DEIS states in part:

> "The BLM views management of sensitive species as an opportunity to practice pro-active conservation; this management should not be onerous, or a show stopper of other legitimate, multiple use activities (USDI-BLM 2001).

Further down on the same page, under "Impact Significance Criteria", the DEIS states that impacts to BLM Wyoming state sensitive plant, wildlife and fish species would be considered significant if the following was to occur: project related impacts jeopardize the persistence of any BLM Wyoming state sensitive plant, wildlife, or fish species. On page 4-82 the DEIS states:

> "The anticipated disturbance of white-tailed prairie dog colonies is expected to be low, and no significant impacts to the white-tailed prairie dogs are expected."

Approving this project is consistent with white-tailed prairie dog management objectives.

**Comment 150-25s:** The BLM should also coordinate with the multi-state prairie dog conservation team to determine how the development of these large complexes may affect the state's attempts to determine how the development of these large complexes may affect the states' attempts to conserve the white-tailed prairie dog and avert ESA listing.

**Response:** This is outside the scope of the Desolation Flats Project.

**Comment 150-25t:** Now the BLM proposes to permit the conversion of a 9400+ acre white-tailed prairie dog complex to oil and gas development with only discretionary mitigation.

**Response:** Please refer to our response to comment 25m.

**Comment 150-25u:** Until white-tailed prairie dog status is better understood, the BLM and other federal agencies should take a precautionary approach in managing large complexes.

**Response:** Please refer to our response to comments 25q and 25r.

**Comment 150-25v:** ….it (BLM) has not considered the impacts or reducing the favorability of this area as a potential ferret reintroduction site.

**Response:** The BLM is unaware of any such proposals or plans. Re-introduction of black footed ferrets is outside the scope of the DEIS.

**Comment 150-25w:** The BLM also makes the connection between other imperiled species like the BLM sensitive western burrowing owl and the proposed Threatened mountain plover and prairie dogs, but does not consider the consequences the prairie dog habitat loss could have on these species.

**Response:** The DEIS states in Chapter 4, on page 4-83:

> "The number of burrowing owls observations within the DFPA indicate that surveys for this species should be made prior to construction in prairie dog colonies during the owl breeding /nesting season. If nesting owls are found, the same measures used for other raptor species (see Section 4.7.4.1.6) would be applied. Given these precautionary measures, no adverse impacts to this species are expected to result from the implementation of the Proposed Action."

The effects of any prairie dog habitat loss is not directly assessed for mountain plover, however effect of the proposed action on mountain plovers is detailed in Chapter 4, on pages 4-75 and 4-76. In addition, please refer to our response to comment 24a.

**Comment 150-25x:** The BLM must also fully evaluate the significance of lands administered by the BLM or actions undertaken by BLM in conserving, maintaining, and restoring these species, and the BLM must determine the occurrence, distribution , abundance, condition, population dynamics, habitat conditions and needs, and current threat of and to these species.

**Response:** For lands outside the DFPA, this is outside of the scope of the Desolation Flats EIS. For lands inside the DFPA this evaluation occurs in Chapter 3 and Chapter 4 of the EIS.

**Comment 150-25y:** For all of these reasons, the BLM must provide meaningful and enforceable protections for white-tailed prairie dog colonies and for other Sensitive species within the Project Area.

**Response:** Protective actions or mitigations proposed for wildlife, including white-tailed prairie dogs, are detailed in Chapter 2 of the EIS, especially on page 2-38 and 39, and Chapter 4 on page 4-79 and 80 for the proposed action.

**Comment 150-25z:** The DEIS does not consider how this project could affect black-footed ferret recovery.

**Response:** The DEIS does not consider how this project could affect black-footed ferret recovery, that is outside of the scope of the DFPA. It does however evaluate the effects of the proposed action and alternatives in Chapter 4 for black-footed ferrets within the DFPA.

***Refer to BLM Policy 150-3 for the following responses.***

**Comment 150-25aa:** However, the DEIS presents no evidence that the Fish and Wildlife Service has been apprised or has determined that this area is not essential to black-footed ferret recovery.

**Response:** Consultation with the US Fish and Wildlife Service has occurred and concurrence obtained prior to the issuance of a Record of Decision. Black-footed ferret discussion in the Biological Assessment can be found in Appendix I at page I-4 through I-7

**Comment 150-25bb:** Approving this project now violates NEPA's prohibition on interim actions.

**Response:** The DEIS does not approve any actions for the DFPA. Any approval will occur from the Record of Decision, which will be issued after the Final EIS and other steps occur.

**Comment 150-25cc:** The current Great Divide Resource Management Plan does not address prairie dog management, but this problem should be redressed through revision.

**Response:** Presumably you mean revision of the RMP. Revision of the RMP, and the issues such would address are outside the scope of the DEIS. Also please refer to our response to comment 2a.

**Comment 150-25dd:** Approving this project now will have adverse environmental impacts and limit the choice of alternatives that conserve white-tailed prairie dogs and associated species in the revised RMP.

**Response:** Please refer to our response to comment 25bb.

**Comment 150-25ee:** This area has been nominated for ACEC designation.

**Response:** Designation of the Dad prairie dog complex as an ACEC is being considered under the Rawlins RMP revision process. No disturbance in prairie dog colonies will be authorized that would damage its suitability for consideration as an ACEC under the DFPA until this issue is decided.

**Comment 150-25ff:** Approving the project may remove this site from consideration as a black-footed ferret reintroduction site.

**Response:** Re-introducing black footed ferrets into the Desolation Flats project area is outside of the scope of the Desolation Flats EIS. The BLM is not aware of any proposals being actively considered for this action.

**Comment 150-25gg:** Clearly, approving this project based on the limited analysis and purely discretionary mitigation measures in the DEIS would be arbitrary and capricious and would support the position that only ESA listing will be adequate to stem white-tailed prairie dog declines and promote recovery since the state federal agencies continue to fail to manage this species proactively.

**Response:** For “limited analysis” please refer to our response to comment 25a. For “purely discretionary mitigation measures” please refer to our response to comment 25m.

**Subheading XXVI: Endangered and Sensitive Fish**

**Comment 150-26a:** The BLM’s analysis of the effects of the Desolation Flats project on BLM Sensitive fishes in Muddy Creek (the bluehead sucker, roundtail chub, and flannelmouth sucker) and the Colorado River Endangered fishes downstream of the project area (the bonytail, razorback sucker, humpback chub, and Colorado pikeminnow) are completely insufficient.

**Response:** The effects of the proposed action are analyzed for Special Status fish species in Chapter 4, especially on pages 4-73, (Threatened, Endangered or Proposed for Listing Species of Plants, Wildlife and Animals, including bonytail, Colorado pike minnow, humpback chub and razorback sucker), and pages 4-76/77 (environmental effect expected to the those fishes from the proposed action), and page 4-78 for alternative A. Sensitive species of fish are also found in Chapter 4, especially on pages 4-86 and for Alternative A page 4-89. The EIS concludes that implementation of the proposed action is not likely to adversely affect these fish species. The BLM believes the effects analysis on fish is sufficient for the DFPA.

**Comment 150-26b:** According to the DFEIS, Red Wash has been classified as a Class 3 stream by WDEQ, indicating that it currently or potentially supports non-game fishes. And yet the BLM has failed to list the species present in Red Wash.

**Response:** The DEIS, in Chapter 3, at 3.8.1.2 page 3-68 states:

> "Surface water is scarce and perennial streams within the DFPA are limited to the most downstream portion of the Sand Creek drainage during wet years (see Section 3.4.2.1)."

In the next paragraph it is stated

> "None of these fish species are likely to be found in streams within the DFPA, nor has critical habitat been established in Wyoming for any of these species (Upper Colorado River Endangered Fish Recovery Program, 1999)"

On page 3-39 the DEIS states in part "

> "All streams within the project area are Class 5 streams (incapable of supporting fish) (WGFD 1991).

On page 3-37 the DEIS states:

> "There are no naturally occurring lakes or ponds in the project area."

**Comment 150-26c:** Are the bluehead sucker, flannelmouth sucker, or roundtail chub present in this stream? This is important baseline data to gather prior to completion of the EIS so that impacts to these species as a result of the Desolation Flats project could possibly be quantified.

**Response:** Please refer to our response to comments to 26a and 26b. Due to the absence of perennial water and hence fish within the stream, the BLM does not anticipate effects upon fishes you refer to.

**Comment 150-26d:** How will this increase in potentially toxic sediment impact the three species of BLM sensitive fishes in the Muddy Creek drainage, or the four species of Endangered fishes downstream in the Little Snake and Yampa Rivers?

**Response:** The Proposed Action is not expected to affect this habitat provided that mitigation measures for water and soils outline in the document are implemented. Please refer to our response to comments 26a and 26b.

**Comment 150-26e:** Once again, the BLM's failure to present the siting locations for wells, pipelines, and roads prevents the agency from completing the required analysis of environmental impacts.

**Response:** Please refer to our responses to comments 3a and 3b.

**Comment 150-26f:** This is a candid admission on the part of BLM that because the agency does not know precisely where (and how close to waterways, and on what types of soils) surface disturbance will occur, it cannot assess the magnitude of impacts to surface waters.

**Response:** Please refer to our responses to comments 3a and 3b.

**Comment 150-26g:** What are the effects of seepage of toxic compounds, whether produced water or other drill wastes, on fishes in Muddy Creek and the Little Snake and Yampa systems?

**Response:** Please refer to our comments to 26a and 26b.

**Comment 150-26h:** The cumulative effects analysis on Endangered and Sensitive fish species is completely inadequate due to the omission of the Atlantic Rim Coalbed Methane Project from the cumulative effects analysis.

**Response:** Cumulative effects from the Atlantic Rim Project are detailed on pages 5-3 and 4 of Chapter 5, "Cumulative Impact Analysis".

**Subheading XXVII: Plant Species of Concern**

**Comment 150-A27a:** The BLM must present a spatial analysis of the occurrence of "habitat judged important for survival" for plant species of concern.

**Response:** The DEIS discloses that there are one threatened plant species ("Ute Ladies-tresses") present within the DFPA, and one known sensitive plant species, "Gibben's beardtongue". 10 sensitive plant species are unlikely to be present, and 10 species are possibly present. On the ground surveys for sensitive and threatened plants will be conducted in response to site specific APD's and other proposals. When the presence of threatened or endangered plant species is detected, disturbance activities will be moved away from occupied habitats to ensure their security and survival as individuals and as a population. A map of "habitat judged important" is not necessary to ensure adequate protection for threatened and endangered plants within the DFPA.

**Comment 150-27b:** Secondly the BLM must define in an unequivocal way the magnitude or level of impact that "would threaten the viability of the local population."

**Response:** Please refer to our response to comments 3a and 3b. Please refer to page 2-37 "Vegetation and Wetlands" under 2.5.2.11.2 "Resource-Specific Requirements" for applicable mitigations and further guidance. Also please refer to our response to comment 150-27a.

**Comment 150-27c:** Finally, and perhaps most importantly, a spatial presentation of wells, roads, and pipeline layouts is a prerequisite to determining to what extent roads, wells and pipeline will impact the habitats of these plant species of concern.

**Response:** Please refer to our response to comments 3a and 3b. Impacts to plant species of concern are detailed in Chapter 4, part 4.8 "Special State Plant, Wildlife, and Fish Species". Impacts of either action alternative are detailed on page 4-77. Implementation of the Proposed Action is not expected to impact threatened plant species, and no significant impacts to sensitive plant species are anticipated.

**Comment 150-27d:** While this may be true, the fact that the locations of roads, wells and pipeline is unknown to the BLM renders it impossible for the agency to determine to what extent roads wells, and pipelines will impact the habitats of these plant species of concern.

**Response:** Please refer to our response to comments 3a and 3b.

**Subheading XXVIII: Noxious Weeds**

**Comment 150-28a:** But what about weed sites brought in from off-site on mud-encrusted construction drilling or production vehicles? Will there be a requirement to power wash all equipment, pickup trucks, and other weed-seed transporter prior to entering the DFPA? Such a measure should be mandated in the FEIS.

**Response:** Mitigations for invasive/noxious weeds are detailed on page 2-37 "Invasive/non-native Species". The DEIS, in Chapter 4 on page 4-49 states in part:

> "However, with implementation of best management practices and proposed mitigation measures, including non-native species establishment and invasion and remediation, no significant impacts are anticipated."

**Comment 150-28b:** This statement indicates that current management practices are failing miserably at preventing the invasion of noxious weeds, and that addition, stronger steps must be taken in the future

**Response:** Mitigations for invasive/noxious weeds are detailed on page 2-37 "Invasive/non-native Species". The DEIS, in Chapter 4 on page 4-49 states in part:

> "However, with implementation of best management practices and proposed mitigation measures, including non-native species establishment and invasion and remediation, no significant impacts are anticipated."

**Subheading XXIX: Paleontological Resources**

**Comment 150-29a:** All these classes require ground reconnaissance at a minimum which cannot be satisfied through a mere "spot check survey"

**Response:** Detailed surveys will be conducted when site specific proposals are received tiered to the Desolation Flats Record of Decision, whatever it is. Also, please refer to our response to comments 3a and 3b

**Comment 150-29b:** The FEIS must unconditionally require detailed surveys prior to all surface disturbing activities, regardless of geologic formation type.

**Response:** Refer to our response to comment 29a.

**Subheading XXX: Cultural Resources.**

**Comment 150-30a:** …it is apparent that BLM has not taken adequate procedural steps to ensure that important known and unknown cultural resources in the DFPA will be protected in the wake of increased energy development. Instead of taking the required "hard look", the BLM has at best, taken only a cursory glance at the potential impacts to the cultural resources in the area.

**Response:** When any undertaking, as defined in 36 CFR 800.16(y), is proposed in the study area, a Class III cultural resource inventory (as defined in the Cultural Resources Appendix B included in the FEIS) will be conducted to determine if any cultural resources are within the Area of Potential Effect (APE). Any cultural resources found will be evaluated as to eligibility for the NRHP and if found to be eligible, mitigation measures will be carried out to protect the cultural resource. These steps are found to be in compliance with Section 106 of the NHPA and NEPA. This will provide the requisite "hard look" under NEPA you mention.

**Comment 150-30b:** First, the DFPA is roughly 233,542 acres, but only 5% of the acreage has been surveyed for cultural resources. There simply can be no adequate description of the affect cultural environment if 95% of it has not been surveyed.

**Response:** Please refer to our response to comments 3a and 3b. In addition, please refer to our response to comment 30a. Furthermore, many cultural resource sites have no surface manifestation, therefore even if a higher percentage of the area had been inventoried, there would be no way to know what existed subsurface. Finally, information concerning the cultural chronology and assumptions about resources which might be found in the project area have come from all over southern Wyoming and northern Colorado. While only a small portion of the study area has been subjected to Class III inventory, reasonable assumptions about the archaeological materials which could be found in the area can be made.

**Comment 150-30c:** Second, even if the cultural resources had been properly surveyed, the specific locations where surface disturbance will occur under the Proposed Action are unidentified. Because both the cultural resources and the location of the impacts remains so speculative, the DEIS requires more study and ultimately more specificity.

**Response:** Please refer to our response to comments 3a and 3b. In addition, please refer to our response to comment 30a.

**Comment 150-30d:** First, BLM has identified 900 historic or prehistoric sites, yet over half of them (56%) have not been evaluated for eligibility for nomination to the National Register of Historic Places (NRHP).

**Response:** Evaluation of eligibility for the NRHP occurs when it is determined that a cultural resource site is found to be within the APE of a proposed project. Evaluating the eligibility of historic sites found under previous projects in not within the scope of the DFEIS. If NRHP eligible sites, are encountered in proposed disturbance areas, they will be subject to the cultural mitigations detailed in Chapter 2, pg. 2-40 under “Cultural Resources” and the Cultural Resources Appendix, thus no adverse impacts would be expected.

**Comment 150-30e:** Given the special potential of the area to reveal additional and significant cultural resources, the DEIS fails to adequately assess the environmental consequence that the Proposed Action would have on these currently unknown resources.

**Response:** Please refer to our responses to comments 3a, 3b, and 30a. We agree that the discussion of impacts is not sufficient to adequately examine the impacts development may have on cultural resources. The following language has been included in the FEIS.

> Under the proposed action it is anticipated that 385 oil and gas wells would be drilled (592 for the Alternative A), disturbing about 2,029 acres of land (including all related facilities and pipelines) (3,193 acres for Alternative A). Standard inventory and recordation procedures conducted in conjunction with actions would protect most cultural resources from significant damage and would increase the database of known cultural properties.
>
> Construction activities resulting from minerals actions that disturb the ground surface and subsurface would have the potential to directly impact cultural resources not identified prior to the activity. Unanticipated subsurface discoveries (cultural resources found during and not prior to ground disturbing activities) would potentially occur from well location, road, and pipeline construction in culturally sensitive areas. Impacts to cultural resources identified in a discovery situation are greater than impacts to resources that were previously identified (and thereby avoided or subjected to mitigation

> measures) because damage to discovered sites occurs prior to their recordation and evaluation, thereby complicating mitigation procedures. Unanticipated discoveries result in the loss of some or occasionally all of the cultural resource involved. However, mitigation of impacts to discoveries is often accomplished through data recovery excavations that increase our understanding of prehistory.
>
> Areas within ¼ mile of cultural resources eligible to the NRHP under Criteria A, B, or C would be subject to avoidance for all ground disturbing activities. This will ensure the protection of those sites from activities that may compromise the values for which they are eligible.
>
> The visual setting (viewshed) of cultural resources eligible to the NRHP under Criteria A, B, or C would be managed to mitigate adverse visual impacts to a distance of two miles or the visual horizon, for actions which do not exceed 20 feet in height. Development projects that are greater than 20 feet in height would be evaluated on a case-by-case basis to determine the visual impacts greater than two miles.

This will ensure the protection of those sites from activities that may compromise the values for which they are eligible.

**Comment 150-30f:** Second, BLM's required discussion of direct and indirect effects on the known cultural resources is inadequate and there is no mention of cumulative impacts.

**Response:** BLM believes additional text in Chapter 4 in the FEIS, plus the added Cultural Appendix (B), coupled with the data in the DEIS will satisfy any concerns. Cumulative impacts are addressed in Chapter 5, "Cumulative Impact Analysis" in section 5.3.11 "Cultural Resources".

**Comment 150-30g:** Similarly, none of the alternatives give proposed locations where actual development will occur. This combination of "unknowns" is deeply troubling. It is not possible to adequately assess the varied impacts, nor can the BLM take a "hard look" when so many basic questions remain unanswered.

**Response:** Please refer to our responses to comments 3a, 3b, and 30a.

**Comment 150-30h:** An example of BLM's failure to analyze indirect and cumulative impacts associated with the Proposed Action is the manner in which surface disturbance is presented and indeed, downplayed.

**Response:** This argument seems to argue that there are "edge" effects upon cultural resources that exceed the effects on cultural resources from disturbance in general. BLM has added language in the FEIS that analyzes this in more detail.

**Comment 150-30i:** BLM briefly mentions unauthorized surface collecting of artifacts as an indirect impact, but again, even if BLM has attempted a more thorough analysis it still would have been ineffective because BLM has no knowledge of the true extent of the existing surface artifacts and does not know precisely where development will occur. The DEIS also fails to consider the effects of increased ORV use and human presence in the DFPA stemming from the new road building activities.

**Response:** Please refer to our responses to comments 3a, 3b, and 30a.

**Comment 150-30j:** In sum, NEPA calls for BLM to make a "reasonable, good faith, objective presentation of the topics" (citations). BLM has failed to do so.

**Response:** Please refer to our responses to comments 3a, 3b, and 30a.

**Comment 150-30k:** BLM is also responsible for looking at ways to lessen the impacts of the Proposed Action on the cultural resources by establishing a full range of reasonable alternatives. 40 CFR 1502.14. Each of the three alternatives (including the no action alternative) allows for increased oil and gas development in the DFPA.

**Response:** Please refer to our responses to comments 5a and 5b.

**Comment 150-30l:** To the contrary, none of the alternatives even begin to specifically analyze these impacts to the cultural resource; nor does BLM's reliance on future actions ("procedures… will be used… in arriving at determinations regarding the need and type of mitigation required") satisfy BLM's requirements under NEPA to "rigorously explore and objectively evaluate all reasonable alternatives."

**Response:** Please refer to our responses to comments 3a, 3b, and 30a.

**Comment 150-30m:** Next, BLM's mitigation program does not sufficiently guarantee that the cultural resources in the DFPA will be preserved.

**Response:** The BLM believes that the mitigation measures proposed are adequate and that no additional mitigations are necessary (see page 4-100, "Additional Mitigation Measures").

**Comment 150-30n:** Mitigation can play an important role by reducing the impacts to the cultural resource and it should be given a more thorough treatment in the DEIS. Unfortunately BLM's mitigation plan is essentially a non-plan, or at best a promise to make a plan in the future.

**Response:** The BLM agrees with the first sentence of this comment. Cultural resource mitigation would be formulated on a case-by-case basis as warranted based on the cultural resource and the specific type of undertaking. The standard mitigation measures outlined in Appendix B of the FEIS encompass the range of possibilities the BLM will use to ensure cultural properties are not adversely impacted.

**Comment 150-30o:** In sum, BLM's mitigation "plan" is an ad hoc, piecemeal treatment of the effects to the cultural resources, not a well thought-out, comprehensive strategy that would allow the BLM to take the legally required "hard look"

**Response:** Please refer to our response to comment 30a and 30n.

**Comment 150-30p:** Of particular concern is the lack of any specific mitigation regarding the eligible historic trails, most notably the Cherokee Trail. The identified .25 mile buffer zone might protect the trails themselves, but may be insufficient to protect their historic and aesthetic viewshed and character, especially because the routes of the trails have not been "verified in the field."

**Response:** The BLM has added historic trail mitigations to the FEIS. See Cultural Appendix B. The identified 0.25 mile spacing standard is consistent with the current RMP, as found at page 49 of the Great Divide Resource Area Record of Decision and Approved Resource Management Plan.

**Comment 150-30q:** The BLM has also not provided analysis of impacts to the viewshed of the Cherokee Trail, and which could occur beyond the ¼ mile buffer but still inside the visual horizon of the Trail, and which could detract from the setting on the Cherokee Trail, an important component of its historical legacy.

**Response:** The BLM has included additional analysis to impacts to the Cherokee Trail from DFPA project development, and disclosure of such in the FEIS.

**Comment 150-30r:** This is the minimal mitigation required to protect historic trails, and we recommend even stronger protections. The BLM should require a 5-mile no-surface-disturbance buffer around the Cherokee Trail, with COAs attached automatically as a condition of APD approval, and exceptions granted only in cases where surface impacts would be rendered completely invisible to visitors on the Cherokee Trail by intervening topography and/or vegetation.

**Response:** As many areas surrounding the Cherokee Trail have been leased for mineral exploration at this time, there is no way to legally preclude development within five miles of the Cherokee Trail. Surface disturbances within two miles of the Cherokee Trail are assessed to determine what visual impacts they may have on the trail. In areas where development has already occurred, the viewshed has been previously compromised and there is no reason to preclude surface disturbing activities in these areas. Extensive visibility analyses have determined that the two mile viewshed is a reasonable distance to assess visual impacts to historic trails from oil and gas development activities. Surface disturbing activities located within two miles of the historic trail would have special mitigation requirements before being permitted to ensure the least amount of visual intrusion.

**Comment 150-30s**: An archeological survey of the area is needed to delineate the stretches of the Outlaw Trail that (sic) run through or near DFPA in order to determine the impacts of the proposed natural gas project.

**Response:** No evidence has been located pertaining to the “Outlaw Trail”. If any evidence of the Outlaw Trail were located during Class III inventories relating to specific projects, the site would be evaluated as to eligibility for the NRHP. If the property were found to be not eligible for listing in the NRHP, no further work would be conducted in association with the site. If the site were found to be eligible for listing in the NRHP, the BLM would ensure protection and mitigation measures were conducted to protect the historic property.

**Comment 150-30t:** BLM also fails to discuss concrete monitoring plans, preferring instead, to rely on the Operators to monitor themselves and to report to BLM if cultural resources are discovered in the process of development.

**Response:** The BLM has added text to the FEIS that details how cultural resource monitoring is accomplished during ground disturbing activities. In circumstances where the BLM believes there is potential to uncover subsurface cultural resources during construction activities, a BLM permitted archaeologist will be on hand to assess the cultural resource and notify the BLM if and when a cultural resource issue is found. Work would not proceed until a

Notice to Proceed is issued by the BLM following resolution of these issues. The BLM has the discretion to require an archaeological monitor on specific projects based upon known cultural resources in the area and soil deposition in the project area.

**Comment 150-30u:** The DEIS does not address the very real possibility that industry might choose not disclose the discovery of cultural resources to the BLM. In its analysis of the impacts to cultural resources, BLM is required to assess the possibility that industry might not cooperate voluntarily.

**Response:** In those cases where BLM requires monitoring of ground disturbing operations, the Operator is required to retain a BLM approved independent archeological staff to perform those duties. Please refer in addition to our response to comment 30t.

**Comment 150-30v:** A more comprehensive treatment of mitigation and monitoring is necessary in order to "insure a fully informed and well-considered decision."

**Response:** The BLM agrees with this assertion.

**Comment 150-31a:** BLM's inadequate analysis of the cultural resource in the DFPA blatantly disregards its responsibilities under NHPA.

**Response:** The BLM believes that, given the additional mitigations and effects analysis it has included in the FEIS, along with the current analysis and disclosure as it stands, its responsibilities under NHPA are fully upheld.

**Comment 150-31b:** As of June 20, 2003, some three months after the publication of the DEIS, the Wyoming SHPO has not received a request to comment (phone conversation the Fred Chapman, Archeologist/Native American Liaison, WY SHPO, 6/20/03). The fact that the SHPO was not consulted prior to the publication of the DEIS (and has still not been contacted months after its publication) contravenes both the letter and spirit of the regulations. Id. BLM should make consultation regarding the irreplaceable cultural resources found in the DFPA an immediate priority.

**Response:** SHPO was consulted with by BLM in this matter as appropriate under existing agreements.

**Comment 150-31c:** Again, the use and tense of the word "would" denotes a future, hypothetical consultation- not an actual, present consult as required by the regulations. Timing is crucial in order to ensure that tribes and organizations have a "reasonable opportunity to identify…concerns about historic properties…advise on the identification and evaluation of historic properties….articulate …views on the undertaking's effects on such properties, and participate in the resolution of adverse effects. For this reason, "[c]onsultation should commence early in the planning process, in order to identify and discuss relevant preservation issues and resolve concerns…"

**Response:** See our response to comment 31d. If cultural resources were encountered during a Class III cultural resource inventory that may require Native American Consultation, site-specific consultation would be initiated. Pursuant to the Protocol Agreement between the Wyoming SHPO and the Wyoming BLM, consultation occurs on every surface disturbing activity prior to being permitted to commence.

**Comment 150-31d:** It appears from the text of the DEIS that even in this late stage, BLM has chosen not to make the effort to contact the appropriate Native American groups.

**Response:** During the Scoping phase of the EIS process, letters were sent to the Shoshone Tribal Cultural Center, the Eastern Shoshone Tribal Council, the Comanche Business Council, the Northern Arapaho Tribal Business Council, the Fort Hall Business Council, the Northern and Southern Ute Tribes and the Medicine Wheel Coalition, but none of the Tribes responded.

**Comment 150-31e:** While it is not clear why BLM failed to mention those correspondences in its DEIS (sic) courts have made it known that even when an agency attempts to contact interested Native American groups, "a mere request for information is not necessarily sufficient to constitute the reasonable effort" section 106 requires.

**Response:** Scoping notification is not a "mere request for information." The Scoping notification requests comments, issues, and concerns from potentially interested parties, puts potentially interested parties on notice that proposals are being evaluated for a specific area, and provides them with direct route to have their concerns heard. Additional affirmative attempts to elicit concerns/information did not yield any interest from the tribes.

**Comment 150-31f:** The discrepancy in lists between the BLM and SHPO (with the Sioux and Northern Cheyenne being recommended by the SHPO but not contacted) illustrates the mistakes that occur when BLM does not follow proper procedure. Had BLM consulted with the SHPO early in its decision making process, these groups would have been contacted. Even if all groups had been sent letters, BLM incorrectly assumes that "contact" is equivalent to "consultation". A letter should be just the first step n BLM's "reasonable and good faith effort" to attempt to include these groups in true consultation.

**Response:** The discrepancy between the lists provided by the SHPO and the BLM is that BLM determines who will be contacted based upon historic documentation of Native American tribal lands. There is no evidence to support the Sioux or the Northern Cheyenne traditionally occupied the area of concern; therefore they were not contacted. The BLM agrees that a letter should be just the first step in attempting to include Native American groups in consultation. However, the letters sent to each tribe specifically outlined the objectives of the DEIS and asked if they had concerns to contact the BLM archeologist. In addition, when any individual project associated with the Desolation Flats area is proposed that may impact a potential TCP, Native American groups will be contacted and consulted with for the individual project.

**Comment 150-31g:** The DEIS has additional problems under NHPA. Pursuant to 110 of NHPA, BLM must "establish…a preservation program for the identification, evaluation and nomination to the National Register of Historic Places [NRHP]…" 16 U.S.C. 470-2(a). BLM has identified 900 sites within DFPA; however, 56% of these sites remain unevaluated. DEIS at 3-18. The 900 sites represent an inventory of only 5% of the total project area.

**Response:** Section 110 of the NHPA states that each Federal agency shall establish…a program for the identification, evaluation, and nomination to the National Register of Historic Places, and protection of historic properties. This section of the statute was not meant to be applied to individual Federal agency actions nor individual Federal agency offices, but to the Federal agency as a whole. The BLM manages over 260 million acres in 11 western states plus Alaska. Through its preservation program, which was fully established in 1974 and is laid out in the 8100 BLM Manual Series, the BLM provides policy and guidance for the proactive identification, evaluation, and nomination of eligible properties to the National Register of

Historic Places apart from the procedures required by Section 106 of the NHPA. Section 110 establishes a goal for Federal agencies in the management of historic properties, but does not establish time frames or dates for the completion of the identification and evaluation process on public lands. The BLM continues to progress in its Section 110 goals.

**Comment 150-31h:** It is unfortunate that given the myriad of undiscovered cultural resource undoubtedly to be found in the DFPA, BLM has chosen to commit most of the DFPA to oil and gas development before it has made a good faith effort to adequately assess, let alone avoid or mitigate the adverse effects under 36 CFR 800.5 if the proper baseline information has not been collected.

**Response:** The DEIS for Desolation Flats does not reflect a decision to commit DFPA to oil and gas development, it analyzes the effects of implementing the Proposed Action and its alternatives. Chapter 3 of the DEIS discloses much of what is currently known regarding the cultural resources of the DFPA. Chapter 4 analyzes the effects to the environment, including cultural resources in detail. Chapter 5 discloses the cumulative effects that are expected to occur. As site specific proposals come forward, tiered to the Desolation Flats ROD, they will be reviewed in the field with site specific surveys of disturbance areas, and any cultural issues or problems identified and mitigated in advance. As projects are implemented, the BLM will require, when appropriate, on site archeology staff to monitor operations and detect and protect cultural resources when they are found.

**Comment 150-31i:** Even though the regulations allow for some phased identification and evaluation for large land areas, the DEIS does not identify a responsible way this will occur. See 36 CFR 800.4(b)(2). BLM simply states (again in its "future-hypothetical tense) that [m]easures would be taken to mitigate or minimize adverse effects to historic properties included in or eligible for the [NHRP]." DEIS at 4-97, This is a grossly irresponsible handling of the irreplaceable cultural resources Congress intended to safeguard by the passage of the NHPA.

**Response:** The BLM believes that when describing future actions, future tense is appropriate. Please refer to our responses to comments 31h, 30a, and 30d.

**Comment 150-31j:** At the very least, BLM should act now to ensure that a proper evaluation is accomplished for the over 500 known sites currently unevaluated and implement a responsible identification plan for unknown sites consistent with the policy and mandates of NHPA.

**Response:** The BLM is acting now through preparation of the DEIS and FEIS followed by a Record of Decision for the Desolation Flats project. Please refer to our responses to comments 31h, 31a, and 31d.

**Comment 150-32a:** Instead, as evidenced by the DEIS, BLM has chosen to blatantly disregard its responsibilities under these orders.

**Response:** Please refer to our responses to comments 31h, 30a, and 30d.

**Comment 150-32b:** Executive Order 11593 states that Federal Agencies shall "administer the cultural properties under their control in a spirit of stewardship and trusteeship for future generations….[and] initiate measures necessary to direct their policies, plans and programs in such a way that federally owned sites, structures, and objects of historical, architectural or

archeological significance are preserved , restored, and maintained for the inspiration and benefit of the people…."Executive Order 11592, 1, May 13, 1971. BLM's adherence to this mandate is nowhere reflected in the DEIS.

**Response:** Please refer to our response to comment 31g.

**Comment 150-32c:** Indeed, BLM's choice to increase oil and gas development through the Proposed Action is a choice not to preserve, restore, and maintain the cultural resources of the area, but to breach its duty to act as a steward and trustee of these important sites and artifacts.

**Response:** Please refer to our responses to comments 31h, 30a, and 30d.

**Comment 150-32d:** This is particularly true given BLM's failure to assess the effects of development on the cultural resources by providing inadequate baseline data, providing no sufficient mitigation or monitoring plans for the known and unknown resources and ignoring it consultation and inventory duties under NHPA.

**Response:** Please refer to our responses to comments 31h, 30a, and 30d.

**Comment 150-32e:** BLM's failure to make a timely and reasonable effort to contact the appropriate Native American tribes disregards Executive Order 13007.

**Response:** Please refer to our responses to comments 31d, 31e, 31h, 30a, and 30d.

**Comment 150-32f:** The DEIS makes no mention of BLM's efforts to consult with Native American tribes who may possess some affinity with the area. Not only is this a violation of the NHPA, but this inaction also ignores the policy clearly stated in Executive Order 13007. see 36 C.F.R. 800.2 (c)(2)(ii).

**Response:** Please refer to our response on 31c, 31d, 31e, and 31f. Executive Order 13007 states that Federal agencies

> "(1) accommodate access to and ceremonial use of Indian sacred sites by Indian religion practitioners and (2) avoid adversely affecting the physical integrity of such sacred sites. Where appropriate, agencies shall maintain and confidentiality of sacred sites."

The Order goes on to state that Federal agencies must implement procedures and provide Native American groups

> "reasonable notice of proposed actions or land management policies that may restrict future access to or ceremonial use of, or adversely affect the physical integrity of, sacred sites."

The DEIS does not plan to restrict access to any sacred site, and should any action in the future relating to the proposed development potential cause restricted access to a sacred site, Native American groups will be consulted with at that time.

**Comment 150-32g:** The surface disturbing activities inherent in oil and gas development certainly threaten the physical integrity of potentially sacred sites; and as discussed above, BLM's mitigation and monitoring plan is insufficient to address this harm (particularly since 95% of the DFPA remains unsurveyed.)

**Response:** Please refer to our responses to comments 31h, 30a, and 30d.

**Comment 150-32h:** BLM admits that the DFPA has a "high archeological sensitivity"; however, its treatment of the cultural resources in no way contributes to their long-term preservation.

**Response:** Please refer to our responses to comments 31h, 30a, and 30d. The BLM intends for its treatment of cultural resources, while fulfilling it's obligations under FLPMA for multiple resource management, to avoid and minimize adverse impacts to cultural resources.

**Comment 150-32i:** BLM has also not actively sought Native American partnerships, as it has not even begun to meet the basic requisites for Native American consultation. See 36 C.F.R. 800 ©(2)(ii)

**Response:** Please refer to our responses to comments 31d and 31e.

**Comment 150-33a:** BLM's support of the Proposed Action without adequate assessment, evaluation and planning for mitigating and monitoring of the affects to the cultural resources violates its multiple use management policy.

**Response:** Please refer to our responses to comments 31h, 30a, and 30d.

**Comment 150-33b:** Undoubtedly, with so little of the DFPA even surveyed, the choice to allow such extensive development in a relatively untouched landscape will have lasting detrimental effect to the quality cultural environment. In addition, by failing to initially survey to avoid adverse impacts to cultural resources and to study and adopt a meaningful mitigation plan, BLM has violated FLPMA's proscription against "unnecessary or undue degradation of the lands. 43 U.S.C. 1732(b).

**Response:** Please refer to our responses to comments 31h, 30a, and 30d.

**Subheading XXXI: Water Quality**

**Comment 150-34a:** We are concerned that the Proposed Action will result in serious water quality problems. Water produced as a byproduct of natural gas production is likely to be highly toxic. The BLM notes, "Limited data from the deeper parts of this system indicate TDS concentrations in excess of 10,000 mg/l, which exceeds Wyoming DEQ standards for livestock." DFEIS at 3-45. Thus, produced water from gas development in the DFPA would be expected to be of very low quality and high toxicity.

**Response:** On page 3-45, earlier in the same paragraph you quoted from, the DEIS states:

> "The quality of water in the various geologic formations underlying the Washakie Basin range from poor to good."

It is possible that produced water, if any, could have poor water quality. In Chapter 4, page 4-44 the DEIS states:

> "Methods used for the disposal of produced water (water produced in association with the gas which is separated out at the well location) would vary but would generally be accomplished by either (1) disposal in an underground injection well, (2) surface discharge or (3) surface evaporation in lined or unlined ponds. The operators would obtain the permit(s) necessary (i.e. NPDES) for the selected method. Depending on timing of availability, quantity and quality of produced water; some of the produced water could be used in well drilling and completion, and pipeline construction and hydrostatic testing."

Any water discharge to the surface would have to be approved by the Wyoming Department of Environmental Quality under a National Pollutant Discharge Elimination System (NPDES) permit. In order to issue the permit, the DEQ must determine the proposed action will not violate the Clean Water Act and any other applicable laws, rules and regulation.

**Comment 150-34b:** Since the lining of reserve pits is an optional measure rather than an ironclad standard, we can only assume that significant amounts of this toxic water will in fact leak from reserve pits to enter shallow subsurface aquifers and/or intermittent stream channels, thereby polluting the waterways downstream. And yet the BLM has presented no analysis of the impacts of such leakage. To remedy this problem, the BLM should require that reserve pits be lined in all cases, or, better yet, require that pitless drilling techniques be used so that produced effluent is reinjected as a matter of course.

**Response:** Operators may propose to use a liner, or not (page 2-36). Requiring reserve pit liners is a BLM decision, it is not optional for the operator once it is required. Reserve pits are primarily utilized to store fluids, not to dispose of them. When reserve pit soil conditions are permeable enough that excessive fluid loss is anticipated, they are lined to prevent that loss. On page 2-36, third paragraph down, the DEIS describes a mitigation measure for reserve pits. In Chapter 4, page 4-43 the DEIS states in part:

> "Thus, adverse impacts (of drilling fluid leakage) from reserve pits would likely not occur."

Pitless drilling techniques are not needed in those conditions.

**Comment 150-34c:** What are the impacts of the use of magnesium chloride on water quality in the downstream waterways that are home to sensitive or Endangered fishes, such a Muddy Creek and Little Snake River?

**Response:** Additional analysis has been included in Chapter 4 of the FEIS detailing the effects of magnesium chloride, if any, under the Proposed Action and Alternative A. In Chapter 4, 4-47 the DEIS states that impacts from access roads could be kept to non-significant levels with application of the mitigation measures in Chapter 2 and the control measures recommended in Appendix C.

**Comment 150-34d:** Why is there no analysis of the impacts of aquifer cross-contamination through improperly cased production or re-injection wells? What are the odds of such an accident? The BLM must present an analysis of this eventuality and prepare a mitigation plan should it occur.

**Response:** The BLM handbook, Chapter V (2)(a)(3) states in part:

> "The analysis of impacts should be based on the premise that all standard operating procedures and other standard Bureau-wide requirements will be followed in implementing the proposed action and alternatives unless changes in such practices are specifically being addressed in the analysis or considered in an alternative"

Mitigations are standard Bureau-wide requirements, and will always be used when appropriate. The odds of cross aquifer contamination are higher under the proposed action and alternative A, but not quantifiable. The BLM no longer analyzes for the "worst case" scenario, relying instead on analyzing reasonably foreseeable developments. With use of the mitigations detailed in the DEIS, cross aquifer contamination is not reasonably foreseeable. If an accident should occur, actions would be proposed and assessed under NEPA by BLM to deal with the problem as it exists.

**Comment 150-34e:** The BLM's failure to plan the locations of wells, roads, and pipelines once again renders an analysis of impacts impossible, this time for water quality.

**Response:** The DEIS, in Chapter 4, page 4-49 states that specific project impacts on waters of the U.S. cannot be accurately assessed since facility locations have not been identified. Please refer to our responses to comments 3a and 3b.

**Comment 150-34f:** This is a candid admission on the part of the BLM that because the agency does not know precisely where (and how close to waterways, and on what types of soils) surface disturbances will occur, it cannot assess the magnitude of impacts to surface waters. This gross failure is an egregious violation of NEPA, which requires that the agency take a hard look at project impacts, a hard look that depends on the site specific location of construction activities and production facilities.

**Response:** Please refer to our responses to comments 3a and 3b. The BLM feels the DEIS fully complies with the requirements of NEPA.

**Subheading XXXII: Soils**

**Comment 150-35a:** Due to the sensitivity of this landscape type, badlands must be avoided at all costs. And yet the Acceptable Plan Criteria for Transportation Planning do not include provisions for prohibiting or even avoiding construction activities in badland areas. See DFEIS at A-1. The BLM must present the spatial distribution of badlands topography in the FEIS, and this deficiency in mitigation measures must be rectified.

**Response:** In Chapter 2, page 2-33 "Soils" mitigations, the DEIS states:

> "The operators would minimize construction activities in area of steep slopes and other sensitive soils, and apply special slope stabilizing structures if construction cannot be avoided in these areas."

Chapter 4 of the DEIS, page 4-35 – 4-36 states in part:

> "In order to preclude significant impacts, roads, drill/well sites, and pipelines should not be placed in areas with steep slopes greater than 25 per cent and in areas with badland soils. Therefore, significant impacts are not expected to occur with implementation of the Proposed Action."

The BLM does not see the need for, nor does it plan to present a spatial representation of badlands topography. Maps and other supporting data will be generated as necessary for these considerations when and if they arise under site specific proposals that come forward from the operators tiered to the Desolation Flats ROD.

**Comment 150-35b:** Revegetation and reclamation is likely to be a source of long-term problems if this project is allowed to go forward.

**Response:** The DEIS, in Chapter 4, "Soils", page 4-34, (2'nd full paragraph) states in part:

> "Therefore, the overall potential for successfully stabilizing disturbed soils is poor to fair. Field reconnaissance and review of existing reclamation in the project area suggests that successful reclamation can be attained with aggressive reclamation measures and follow-up monitoring and remediation."

Additional details on reclamation can be found in Appendix C.

**Comment 150-35c:** The BLM calls for "special efforts to avoid these areas," but fails to identify what these special measures entail.

**Response:** "Special measures" are detailed in Chapter 2, "Project-wide Mitigation Measures" in the soils mitigation section page 2-33 and 2-34.

**Comment 150-35d:** The mitigation requirement in the DFEIS are insufficient to prevent widespread damage to soils and long-term revegetation problems.

**Response:** Please refer to our responses to Comments 35b and 35a.

**Comment 150-35e:** What sand, clay, or salt content is considered "excessive" for the purposes of this project? Numerical standards are needed, because if these criteria are left to the judgment of the Operators, it is likely that sensitive soils will be given short shrift.

**Response:** The determination of which soils have excessive sand, clay, or salt content will be made by the BLM in site specific environmental analysis tiered to the DF ROD.

**Comment 150-35f:** In addition, what will happen when areas of excessive sand, clay, or wetness are too large to be mitigated by final siting choices?

**Response:** The BLM will assess the site specific conditions in the area, the need for the proposed action while using the fully range of mitigations and siting and development alternatives at hand. If there is no way to implement the proposal without significant impacts, the preparation of an EIS may be required, or the proposal denied as made. There are a very broad range of results and options that could occur or arise depending on the actual conditions in the field. Answers turn on the specifics in this case.

**Comment 150-35g:** In order to mitigate properly for such large-scale occurrences of sensitive soils, these should be mapped and presented in the Final EIS as area where surface disturbance will not be permitted.

**Response:** Areas where surface disturbance will not be permitted will not be finitely determined until site specific disturbance proposals (APDs) are received and the conditions presented in the field reviewed, assessed, and mitigations evaluated for effectiveness. These proposals, tiered to the DF ROD will occur after preparation of the DF FEIS. Please refer to our responses to comments 3a and 3b. Also please refer to figures 3-8 and Figure 3-1.

**Comment 150-35h:** Avoidance measures for steep and/or erodible slopes in the DFEIS are insufficient. The mitigation is not watertight……. But these provisions do not outright proscribe construction.

**Response:** The decision to impose mitigation measures is the BLM's, not the operators. While these provisions do not necessarily outright proscribe approval of construction proposals, as you assert, under NEPA when adoption or approval of an action that raises significant impacts occurs, it must be assessed through the environmental impact statement process, necessitating an EIS on the proposal.

**Comment 150-35i:** First of all, the assertion that sensitive soils "cannot be totally avoided" is absolutely false; the BLM has the unequivocal authority to require as a Condition of Approval on APDs to require that surface disturbances not occur on these soils. Secondly, "particular attention" needs to be defined in terms of ironclad standards, not just vague and vacuous promises with no guarantees.

**Response:** You have interpreted our statement out of context. The BLM does have authority to require Conditions of Approval as it deems necessary. The BLM's statement was intended to disclose that implementation of the proposed action and alternative A cannot totally avoid sensitive soils, possibly with adverse effects that BLM wishes to avoid. It is stated so that the decision maker in this matter can fully understand the importance and effects his decision may have, coupled with all the information available from the EIS necessary to make the best decision possible. In this case, "particular attention" attempts to describe the effort BLM will use in a hypothetical situation where the answer or action changes with the specifics of the situation.

**Comment 150-35j:** Certainly, with the availability a capabilities of directional drilling, all sensitive soils in the project area should be avoidable by moving drilling facilities away from them.

**Response:** The BLM cannot agree with your assertion. With the complexities found in the local geology, with the difficulty and cost associated with directional drilling, with the extent of sensitive soils and other resource concerns, there is no guarantee that directional drilling can always avoid such impacts. When those conditions exist where directional drilling is a viable alternative, and other site specific variables and unknowns allow for effective directional drilling, BLM believes this alternative could be utilized. The BLM further anticipates those conditions will not occur as often as it wishes they would.

**Comment 150-35k:** With soils, just as with wildlife, the extent of impacts cannot be determined without knowing exactly where the wells, roads, and pipelines are going to be constructed.

**Response:** The BLM agrees with this assertion. Please refer to our response to comments 3a and 3b for further elaboration.

**Comment 150-35l:** Thus, the BLM cannot offer any analysis on effects to soils and erosion beyond gross estimates, a fact that violates the NEPA requirements to make a thorough evaluation of impacts.

**Response:** Please refer to our response to comments 3a and 3b for further elaboration.

**Comment 150-35m:** The DEIS also presents inadequate standards with regard to conserving and replacing topsoil during construction and reclamation activities.

**Response:** Chapter 2, page 2-34 details that topsoil mitigations for wellpads, including conservation and replacement of topsoil with reclamation. On page 2-9 the DEIS states:

> "Re-spreading of topsoil and windrowed vegetation to the sideslopes of the newly constructed access roads and revegetation would begin the first appropriate season following the well going on production. Reclamation measures would be implemented the first season following the well going on production. The access road to an unproductive well site would be reclaimed upon abandonment of the well using stockpiled topsoil and a seed mixture contained in the approved APD/ROW."

Further mitigation is detailed on page 2-33 through 2-34. The DEIS, in Chapter 4, "Soils", page 4-34, (2'nd full paragraph) states in part:

> "Therefore, the overall potential for successfully stabilizing disturbed soils is poor to fair. Field reconnaissance and review of existing reclamation in the project area suggests that successful reclamation can be attained with aggressive reclamation measures and follow-up monitoring and remediation."

**Comment 150-35n:** It is hard to imagine a case when topsoil salvage and replacement would not be possible, and thus the burden is upon the BLM to elucidate the circumstances under which topsoil replacement would not be mandated, and if there are no such cases, the language in the FEIS should be amended to a non-discretionary requirement.

**Response:** Please refer to our response to comment 35m.

**Subheading XXXIII: Biological Soil Crusts**

**Comment 150-36a:** What measures will the BLM require to promote the re-establishment of biological soil crusts following disturbance and reclamation?

**Response:** ext has been added to Chapters 3 and 4 that detail the presence of biological soil crusts and the effects that the project may have on them (See Errata Section 2).

**Comment 150-36b:** Are there mitigation measures that will enhance the possibility of biological soil crust disturbance following recovery?

**Response:** Refer to our response to Comment 150-36a.

**Comment 150-36c:** What is the timeframe in which biological soil crusts can be expected to recover following abandonment and reclamation of roads and well sites?

**Response:** Refer to our response to Comment 150-36a.

**Subheading XXXIV: Reclamation**

**Comment 150-37a:** We are concerned that many of the scars that occur under the proposed action will take decades to heal even after reclamation efforts, and that some of these impacts may never disappear. According to the BLM, "Reclamation is generally poor to moderate within the DFPA, with some limited areas of good potential." DFEIS at 3-28. The BLM assumes "a reasonable success rate of 60% for reclamation…" DFEIS at 4-35. This statement suggest that 40% of the disturbed areas will never be successfully reclaimed.

**Response:** The sentence after the one you cite states:

> "Field reconnaissance and review of existing reclamation in the project area suggests that successful reclamation can be attained with aggressive reclamation measures and follow-up monitoring and remediation."

**Subheading XXXV: Directional Drilling**

**Comment 150-38a:** In the DEIS, the BLM has failed to give detailed consideration and analysis to a directional drilling alternative.

**Response:** Please refer to our responses to comments 6a, 25o, and 35j.

**Comment 150-38b:** These benefits need to be estimated and included and directional drilling should be re-considered with more complete information.

**Response:** Directional drilling will be considered when there is need for this action, such as the need to avoid sensitive habitats or soils, and when it is feasible. In addition, please refer to our responses to comments 6a, 25o, and 35j.

**Comment 150-38c:** We have attached a report, "Drilling Smarter: Using Directional Drilling to Reduce Oil and Gas Impacts in the Intermountain West", to provide a detailed technical basis, founded on the petroleum engineering literature produced largely by the oil and gas industry itself, which concludes the directional drilling is feasible and economical in virtually any geologic setting, including the setting presented by the DFPA. We incorporate this report and its conclusions in full into these comments, and expect the BLM to respond to it as the agency would to any other public comment in the NEPA process.

**Response:** For direction drilling, please refer to our responses to comments 6a, 25o, and 35j. Additional insight into the advantages and disadvantages of directional drilling can be found on the internet at:
http://www.wy.blm.gov/nepa/rsfodocs/vermbasin/VBPA-well-architecture-letter.pdf.
BLM reviewed the report you have incorporated into your comments, and was unable to find any comments specific to the Desolation Flats DEIS, therefore no responses were generated.

**Comment 150-38d:** The DEIS also ignores the possibility of slant-hole completions, which also do not experience difficulties from the standpoint of binding up the drilling string at bends in the wellbore.

**Response:** In the Glossary, on page GL-3, the DEIS defines directional drilling as "The intentional deviation of a wellbore from vertical to reach subsurface areas of to one side from the drilling site." When discussing directional drilling, the BLM is also considering slant hole completions.

**Comment 150-38e:** The BLM's analysis of the environmental advantages of directional drilling is flawed. The BLM makes an unsupported assertion:

> "Multiple wells per pad do not translate into a direct reduction of surface disturbance,"

due to the increased number of condensate tanks and increased dehydrator and separator size.

**Response:** The BLM's intent, in making that statement, was to say that an individual wellpad supporting a number of directional wells is usually larger that the wellpad for a single vertical well, and that, for example, putting two wells on one pad does not necessarily result in half the disturbance from two wells. This assertion is supported by experience in the Wamsutter Field.

**Comment 150-38f:** If the BLM is to live up to its multiple use mandate, it must require Operators to spend the extra money to achieve substantial reductions in environmental impacts as a cost of doing business on multiple-use public lands.

**Response:** In deciding which mitigations and alternatives are necessary to avoid or reduce environmental impacts in meeting its multiple use mandate under FLPMA, cost may a consideration, but is not a controlling factor in those decisions.

**Comment 150-38g:** Why would the BLM artificially constrain direction drilling in the DFPA based upon drilling rigs used in the Wamsutter Field?

**Response:** In the paragraph before the statement you cite, page 2-44, the DEIS states:

> "Current technologies, along with large reserves, make it possible in some part of the world to drill to a bottom hole location several miles from the surface location. With the right drilling rig, drill pipe, casing programs, mud systems, and directional steering equipment this can be achieved in other areas. However, in the Wamsutter Field, and natural gas producing areas near Wamsutter Field (including the DFPA), there are mechanical limits associated with the standard drilling equipment available."

The intent of the discussion is to disclose the known limits of standard technology utilized in the area. There are no limitations in the DEIS that restricts the use of new technologies, or newer, better, or bigger equipment than is standard in the area if an operator should care or need to make such a proposal. It is likely that when, or if, circumstances present themselves such that a drilling target cannot be drilled by conventional means the operators, using opportunity and ingenuity, may make an unconventional proposal. If such a case happens, the BLM will assess the proposal and make a decision based on the specifics of the case.

**Comment 150-38h:** The argument that directional drilling reduces gas production is a false one over the long term, and the argument that the public interest suffers when marginal plays go undeveloped during periods of glut is even more specious and unsupportable.

**Response:** The BLM was not making the assertions you allege. The intent of the statement was to point out that gas development activities are driven by market forces.

**Comment 150-38i:** The BLM must therefore analyze at least one alternative that mandates the use of directional drilling to cluster wells and reduce impacts as well as to avoid surface disturbance to sensitive landscapes (plover concentration area, big game crucial ranges, plover nesting concentration areas, prairie dog colonies, 2-mile buffers for sage grouse leks and 1-mile buffers for raptor nests), and should select this alternative for implementation in the Desolation Flats project.

**Response:** Please refer to our response to comment 6a.

**Subheading XXXVI. Pitless Drilling.**

**Comment 150-39a:** Due to its environmental advantage, pitless drilling should be mandated as a standard requirement for drilling operations under the Desolation Flats Project.

**Response:** Please refer to our response to comment 34b.

**Comment 150-39b:** All of these impacts are completely unnecessary in light of the availability of "pitless drilling" technology, which recycles drilling muds through the systems and does not require the deposition of toxic waste in surface reserve pits.

**Response:** Please refer to our response to comment 34b.

**Comment 150-39c:** Waters of this low quality and high TDS content, if sprayed into the air for evaporative purposes, would result in a rain of toxic salts and heavy metals on nearby soils which would likely sterilize the soils, kill off the vegetation, and ultimately drain off into Muddy Creek or the Little Snake River during heavy rainfalls. The BLM could avoid all of these impacts through requiring Operators to employ pitless drilling techniques.

Response: Please refer to our response to 34a.

**Subheading XXXVII: Traffic**

**Comment 150-40:** How will such speed limits be enforced? Is there any hope of compliance without a credible enforcement presence?

**Response:** In many cases road conditions limit speed to acceptable levels. BLM roads are designed to allow transportation of equipment, personnel and other materials safely, but are not designed for high speed operation. When excessive speed (or unsafe vehicle operation) are noted by BLM personnel, they can bring it to the attention of Operator for action. Based on routine observations in the field vehicle speed is generally appropriate. The BLM does not routinely post, not does it enforce speed limits on the public lands. The BLM has no authority to enforce speed limits on non-federal lands.

**Subheading XXXVIII: Coal Bed Methane**

**Comment 150-41:** The project description does not encompass the drilling of coalbed methane wells, and the BLM has not presented a detailed analysis of the special impacts of CBM development which are unique and quite different from the impacts of conventional gas development. We therefore conclude that CBM well will not be permitted under the DFEIS, as adequate NEPA analysis has not been performed in this document to support CBM exploration and development.

**Response:** The BLM disagrees with your assertion that natural gas produced from coal beds has special impacts which are unique and quite different from the impacts of conventional gas development. No proposals for coal bed natural gas development have been received to date in the Desolation Flats Project area.

**Subheading XXXIX: Floodplains**

**Comment 150-42a:** These floodplains must not be the site of construction or drilling activities in accordance with Executive Order 11990.

**Response:** When applicable, the BLM will require Proponents to operate in compliance with Executive Order 11990.

**Comment 150-42b:** This Executive Order is not discretionary, and thus the BLM should require that all surface disturbing activities comply with its provisions, without exception.

**Response:** Please refer to our response to comment 42a.

**Subheading XL: Air Quality**

**Comment 150-43a:** WOC did not endorse the air quality assessment protocol

**Response:** BLM acknowledges improper statements were inadvertently included in the DFEIS and has made efforts to correct the mistake.

**Comment 150-43b:** Teton and Washakie Wilderness Areas and Grand Teton NP are absent from the analyses.

**Response:** Refer to the response to Comment 146-2.

**Comment 150-43c:** The DFEIS fails to include all RFD emission sources.

**Response:** Refer to the response to Comment 146-2. The cumulative impacts section was updated with a qualitative discussion.

**Comment 150-43d:** The DFEIS fails to include emission sources located outside the study area.

**Response:** Practical limits must be applied for any analysis, and for this reason study area boundaries are defined. If emission sources outside of the study boundary were to be included, there would be no limit to the scope of the analysis. We refer the readers to the response to Comment 146-2.

**Comment 150-43e:** The BLM fails to ensure compliance with air pollution standards
1. Failure to conduct complete increment consumption analysis.
2. BLM may not rely on State regulatory programs to satisfy its independent obligations.

**Response:** The responsibility for PSD increment consumption analyses continues to be a State responsibility. Analysis shows the project will comply with air quality standards. BLM relies on the analysis in the document plus background monitoring to ensure compliance with air quality standards.

**Comment 150-43f:** A more through discussion of mitigation measures is required.

**Response:** Updated mitigation measures are provided in the revised document.

**Comment 150-43g:** The DEIS must recommend the adoption of emission controls assumed in the air quality analysis.

**Response:** Comment noted.

**Comment 150-43h:** Visibility impairment in Class I areas not prevented.

**Response:** Thank you for your comment.

**Comment 150-43i:** Acid rain impacts underestimated.

**Response:** Please see the response to Comment 146-2.

**Comment 150-43j**: Other air quality issues: Project success rate

**Response:** The Project Proponents provided the well success rate for the Proposed Action and each of the alternatives. We depend upon the proponent's expertise to predict probable outcomes.

**Comment 150-43k:** Other air quality issues: Compressor emissions

**Response:** The 35 hp per well estimate was based upon conventional gas fields. We acknowledge that higher compression rates may be required for shallow gas plays which

typically have lower formation pressures. In an effort to provide a balanced analysis, the 35 hp estimate was applied to projects where actual data were lacking. The majority, if not all of these projects were conventional developments.

**Comment 150-43l:** Other air quality issues: RFD emissions.

**Response:** For oil and gas developments, SO2 emissions typically result from the combustion of diesel fuel, either by construction equipment, heavy duty vehicles, or drill rigs. SO2 emissions are generally a very small fraction of the total emission inventory and occur primarily during the construction and drilling phase of a project. Similarly, the majority of PM emissions are associated with the construction phase of a project and are therefore temporary in nature.

**Comment 150-43m:** Other air quality issues: Well production emissions

**Response:** The Project Proponents did not predict the need for well "blow-downs." Therefore, VOC emissions from this source were not considered.

**Comment 150-43n:** Other air quality issues: Fugitive Dust

**Response:** Wind erosion emissions were considered for the life of the project. We can appreciate the point of view that the applied emission factors may be out-dated, however AP-42 remains the industry standard for estimating wind erosion emissions.

**Comment 150-44:** Assumptions used for reserves calculation are dubious.

**Response:** Section 3.1.1.2 presents a discussion of gas reserves underlying the DFPA. The estimates of recoverable reserves (page 2-30), the 65 percent success rate and the estimates of per/well production (page 4-102), were provided by the Operators. As stated in Section 2.0 (page 2-10), "The Operators anticipate that future development in the DFPA would be concentrated within or near existing fields rather than in outlying areas where development does not currently exist." The Operators have the most detailed and current drilling, geological, geophysical and engineering data regarding these fields and the underlying formations, and the most detailed and current information about the cost of development and production.

**Comment 150-45:** Employment Estimates in the DFEIS are overblown.

**Response:** The comment references Section 3.12.2.3 which describes historic earnings and unemployment in the two affected counties. Direct and indirect employment, income and economic activity estimates associated with the Proposed Action were obtained from the input-output-model, and discussed in Section 4.12.3.1.1. Information for Alternatives A and B are provided in subsequent sections. Employment is discussed in terms of annual job equivalents (AJE), which "reflect an aggregation of all employees whose employment is supported in part by Desolation Flats spending." In addition to new job opportunities, AJE's include currently employed workers whose continued employment would be sustained in part by Desolation Flats-related economic activity. This would be particularly true for indirect employees and for some natural gas service workers. Many of the latter are also likely to be based in regional oil and gas service centers, some outside the DFPA, and relocate to the DFPA only for the duration of their task.

The relatively small population associated with the Proposed Action, described in Section 4.12.3.1.3, would be distributed across the two counties and would be unlikely to strain public facilities in the larger communities, but could contribute to increased public facility and service demand in smaller communities near the DFPA, as described in Section 4.12.3.1.5 and in the cumulative discussion in Section 5.3.12

The commenter is correct that Carbon County inflation adjusted earnings should be 16 percent rather than 21 percent. This figure has been corrected in the FEIS.

**Comment 150-46:** Increased gas revenues will not necessarily buoy local economies.

**Response:** The term "increased earnings" implies an incremental increase over base earnings (without project) for the period rather than an absolute increase in earnings. For example, total historic Carbon County earnings described in Section 3.12.2.3 would be decreased or reduced without the oil and gas earnings described in that same section. Specific project-related earnings estimates are contained in 4.12.3.1.1 and in Tables 4-19 through 4-21. It is correct that earnings associated with the Proposed Action and alternatives would not necessarily buoy local economies, but these earnings would result in higher levels of income than would occur absent the development.

**Comment 150-47** Local communities infrastructure would be strained by the project.

**Response:** The comment addresses Section 3.12.5 which describes existing infrastructure conditions in communities near the DFPA. Section 4.12.3.1.5 describes the Proposed Action-related effects on law enforcement services and says, in part, "Law enforcement and emergency service agencies may need to expand their capabilities to provide adequate coverage in areas experiencing natural gas development." The activity and growth associated with the Proposed Action would contribute to that demand and also provide local and state government revenues to offset the costs of providing those services. Information for Alternatives A and B are provided in subsequent sections.

Section 3.12.5 describes measures that the Town of Wamsutter is currently undertaking to accommodate growth from current and planned drilling and field development operations of existing operators within the area. These conditions are also discussed at some length in Section 5.3.12. At the time of this comment response, a number of these infrastructure and service improvements have been accomplished or are underway. Many of the sources of community infrastructure funding in Wyoming, including certain grant and loan programs, are supported by natural gas severance tax revenues and by the state's share of federal mineral royalties from natural gas production. It is appropriate for communities to receive a portion of these funds to accommodate natural gas-related growth.

Also discussed in Section 4.12.3.1.5, general natural gas-related growth in smaller communities near the DFPA may result in the need for certain infrastructure improvements during the 20-year drilling and field development period, and the population associated with the Proposed Action and alternatives would contribute a portion of the demand for those improvements. The timing, size and costs of those improvements would be dependent on a variety of factors including community development decisions by local governments. Because these factors are not currently known, estimates of the costs of such improvement cannot be included in this assessment.

**Comment 150-48:** Sales and use tax benefits of the project are overblown**.**

**Response:** Section 3.12.6.2 describes historical sales and use tax revenues for the two affected counties. Section 4.12.3.1.6.3 and Table 4-24 present estimates of the portions of Proposed Action-related sales and use tax that would accrue to the county and its municipalities as well as to the State of Wyoming. Sections 4.12.3.1.6.1 and Table 4-22 describe the project-specific ad valorem property taxes that would accrue to relevant taxing entities. Section 4.12.3.1.6.2 and table 4-23 display estimates of severance tax and mineral royalties that would accrue from the Proposed Action. A portion of these latter revenues would accrue to a variety of funds that the State of Wyoming uses to fund infrastructure improvements in communities; it is appropriate that some of these funds are distributed to fund improvements in communities near the DFPA.

**Comment 150-49:** Impact significance criteria have been improperly applied.

**Response:** The analysis contained in Section 4.12.3.1.3 and Figure 4.12 detail estimates of population growth associated with the Proposed Action and describe the anticipated distribution of that growth, primarily to larger communities with excess infrastructure capacity. Further, it is anticipated that most project employees would require short-term housing accommodations in motels and mobile home or recreational vehicle parks, which are in ample supply, although in some cases in communities at some distance from the project area. As noted above, the effects of Proposed Action-related demand for local government facilities and services are described in Section 4.12.3.1.5, and the effects of the Proposed Action in the cumulative context are described in Section 5.3.12.

**Comment 150-50:** Cost estimates for local communities to provide services in support of the project have not been quantitatively addressed.

**Response:** Section 4.12.3.1.3. discusses the relatively small increment of population anticipated for the Proposed Action. Section 4.12.3.1.5 states that local government infrastructure improvements and increases in service levels will likely not be required to serve this relatively minor increment of project-related growth. Section 5.3.12 discusses the cumulative development that may occur. Given that decisions to improve infrastructure and increase service levels may or may not occur and would involve a variety of factors, the timing, size and costs of such improvements cannot be estimated for this assessment.

**Comment 150-51:** Only effects to local ranchers have been considered in the DEIS.

**Response:** Section 4.12.3.1.7 describes potential effects of the Proposed Action on local attitudes and opinions for a variety of different groups, including livestock operators and recreation users. Section 4.9 discusses potential temporary and permanent displacement of recreation users of the DFPA. It is important to remember that grazing allotments are the aspects of ranching that will be most directly affected by the Proposed Action and alternatives, rather than private ranch lands.

**Comment 150-52:** "Organizational Response" is an inappropriate criteria for significance.

**Response:** Section 4.12.3.1.7 discusses potential effects of the Proposed Action on local attitudes and opinions and also states that individuals and organizations with other interests in the DFPA and other relatively undisturbed public lands may be affected by the actions associated with the Proposed Action. Based on scoping responses and comments on the DEIS, the BLM is aware that people outside the surrounding communities have an interest in activities within the DFPA and these interests will be considered in the decision making process.

NEPA does not require that the attitudes and opinions of all parties with an interest in federal actions be quantified, nor does it require estimates of non-market costs.

**COMMENT LETTER 151: KATHLEEN C. ZIMMERMAN, NATIONAL WILDLIFE FEDERATION; LARRY BEESLER, WYOMING WILDLIFI FEDERATION; AND JOHANNAH H. WALD, NATURAL RESOURCES DEFENSE**

**Comment 151-1:** The Draft EIS for DFP fails to provide that true picture of the impacts of those wells because it offers no alternative that would prohibit or even limit oil and gas development in the area.

**Response:** An alternative that would prohibit oil and gas development in the area is outside the scope of the Desolation Flats project area (DFPA) environmental assessment process. The alternatives assessed in the DFPA Draft Environmental Impact Statement (DEIS) do not analyze "prohibiting or limiting development", consistent with the National Environmental Policy Act (NEPA) they analyze the impacts of approving or not approving development as proposed. If selected, the proposed action and alternative A would each prohibit development above the level analyzed by them in the EIS process. Alternative B (no action) analyzes the effects of not approving either of the "action" alternatives.

Measures to ensure wild lands or wildlife habitat impacts are minimized in Desolation Flats are detailed in Chapter 2, part 2.5.2.11, "Project Wide Mitigation Measures" and in the "Additional Mitigation Measures" sections in Chapter 4 for some resources.

**Comment 151-2:** Cumulative impacts from other projects in the Red Desert area are assumed insignificant without any substantiation.

**Response:** Impacts from oil and gas development for the DFPA are disclosed and discussed in general in Chapter 4, in the "Direct and Indirect Impacts, "Impacts Summary", and Residual Impacts" sections of the various resources analyzed. Chapter 5:"Cumulative Impacts Analysis" has a detailed analysis of cumulative effects for the DFPA.

The DEIS, in Chapter 4, "Soils", page 4-34, (2'nd full paragraph) states in part:

> "Therefore, the overall potential for successfully stabilizing disturbed soils is poor to fair. Field reconnaissance and review of existing reclamation in the project area suggests that successful reclamation can be attained with aggressive reclamation measures and follow-up monitoring and remediation."

Additional details on reclamation can be found in Appendix C.

**Comment 151-3:** Unless existing mineral leases contain NSO stipulations, BLM cannot assure the protection of wildlife habitats.

**Response:** Your assertion that BLM cannot ensure habitats will be protected from environmentally harmful drilling and road construction when "no surface occupancy" stipulations are not included in an oil and gas lease's term is wrong. Section 6 of the Lease Terms, found on Form 3100-11b "Offer to Lease and Lease for Oil and Gas" states in part:

> "Conduct of Operations- Lessee shall conduct operations in a manner that minimizes adverse impacts to the land, air, and water, to cultural, biological, visual, and other resources, and to other land uses or users. Lessee shall take reasonable measures deemed necessary by lessor to accomplish the intent of

> this section. To the extent consistent with lease rights granted, such measures may include, but are not limited to, modification to siting or design of facilities, timing of operations, and specification of interim and final reclamation measures."

BLM's ability to uphold environmental constraints upon Operators has been affirmed by Internal Board of Land Appeals decisions and by higher courts. Generally mitigations are used to reduce or eliminate adverse environmental effects. On page 2-32, Chapter 2, part 2.5.2.11, "Project Wide Mitigation Measures" the DEIS states in part:

> "Following are mitigation measures and agency required procedures on public lands to avoid or mitigate resource or other land use impacts."

A detailed resource specific list follows this statement that provides constraints, techniques, and timing mitigations that will be used within the DFPA. The BLM can, and will require Operators to utilize mitigation measures deemed necessary by the BLM to reduce or eliminate adverse impacts from activities proposed within the DFPA. Although the BLM can require no surface occupancy when necessary, it is seldom needed in real life when alternative siting and mitigations are available. This is true even if "no surface occupancy" is not a listed stipulation on a lease.

**Comment 151-4:** Proposed development of 400 to 600 wells in DFPA is not in conformity with the GDRMP. The DEIS ignores the very real impacts of habitat fragmentation.

**Response:** Habitat fragmentation is not expected to be a principle impact within the DFPA as detailed in Chapter 4 (page 4-56), "Introduction". Impacts of oil and gas development are analyzed and disclosed in Chapter 4 of the DEIS.

"Plugged and abandoned" wells do not count towards the disturbance figure because they do not enter that category until they have been site reviewed and accepted as reclaimed by the BLM. "Notice of intent to abandon" wells may be reclaimed but not yet accepted, but since no empirical data is available they are not counted in the DEIS as reclaimed. Additional text added in the Final Environmental Impact Statement (FEIS) further clarify the reclamation status of the various well status categories.

**Comment 151-5:** The Proposed Action is not in conformity with the VRM provisions in the applicable land use plans.

**Response:** The proposed action proposes the construction of 237 producing wells. For Alternative A it is 373 wells. The DFPA FEIS has more analysis of surface disturbance based on conditions observed and implemented within the DFPA from interim drilling and exploration. The Adobe Town WSA is outside the boundaries of the DFPA. As detailed on page 40 of the Great Divide Record of Decision and Approved Resource Management Plan, the DFPA is designated as Visual Resource Management Class III. DFPA effects on visual resources are further described in Chapter 4 under "Visual Resources".

**Comment 151-6:** Mitigation measures are inadequate to preserve wildlife and wildlife habitat.

**Response:** BLM has adopted standard conditions of approval and mitigation measures for surface disturbance impacts from oil and gas operations over a considerable period of time. Those measures and procedures are considered part of the proposed action and are described in Chapter 2 of the DFPA DEIS. These conditions and mitigations have been developed by the BLM from observations of the effectiveness of the mitigation or condition, and adaptive

modification of the mitigation to make it better when needed, or when better techniques are developed. The actions envisioned for the DFPA are common and their effects well known. Generally the BLM's standard mitigation measures and conditions of approval are adequate to avoid or repair adverse impacts to the environment. Where standard procedures are not expected to work or results are uncertain for some reason, the BLM adapts procedures and monitors results to ensure unacceptable effects on the environment are avoided. For example, wildlife mitigation and monitoring studies are being conducted in several oil and gas fields such as CD/WII and the Pinedale Anticline to further improve our knowledge regarding how oil and gas may impact wildlife species and better determine the effectiveness of our currently prescribed protection measures. Wildlife mitigation and monitoring is also a part of the Desolation Flats proposal, see DEIS Appendix H.

**Comment 151-7:** NWF, WWF, and NRDC urge BLM to complete a supplemental DEIS.

**Response:** The BLM does not believe additional alternatives nor a supplemental draft EIS for the DFPA are necessary. The FEIS accurately reflects the environmental effects expected for this proposal.

**Comment 151-8:** The alternatives analysis if flawed.

**Response:** Each of the alternatives analyzed in the DFPA DEIS reflects BLM's authority to control the pace and direction of development on the public lands. The conservation of wildlife and their habitats is a key responsibility of the BLM and the DFPA DEIS reflects that responsibility. Alternative B is appropriate as written and analyzed. APD's would not necessarily be approved as they were submitted. Each proposed action would be reviewed, subjected to environmental analysis, and a decision would be issued to disclose the BLM's choice as appropriate. Based on scoping, internal reviews and input from the Operator's the BLM developed a range of alternatives it believes fully conforms to the requirements of NEPA. Details of alternatives considered but eliminated from detailed study is located in the DEIS on pages 2-42 to 2-43.

**Comment 151-9:** The Draft EIS fails to address the true impacts on wildlife.

**Response:** Please refer to our response to comment 3.

**Comment 151-10:** Additional impacts not addressed in the Draft: Native American sacred sites, hunting, tourism.

**Response:** The FEIS further addresses impacts and process used to limit and/or avoid adverse impacts within the DFPA. Further information on consultation with Native American tribes with interest in the area is also provided. An appendix has been added (Appendix B) that details the archeological survey process and types of review utilized in cultural resource inventories.

Effects of DFPA on hunter and other recreation experiences are detailed in Chapter 4, "Recreation Resources", particularly in 4.9.3.1. Further detailed analysis of socio-economic effects of is found in Chapter 4 at 4.12.3.1.2 "Effects on Other Economic Activities in the Vicinity of the Proposed Action". That economic impact is adequately addressed in the DEIS and will be retained in the FEIS.

**Comment 151-11:** The proposed action does not conform to the existing land use plan.

**Response:** The 1440 well Reasonably Foreseeable Development (RFD) scenario, does not represent a planning decision, rather it is an assumption to analyze the effects that discretionary management decisions have on oil and gas activity. The Great Divide RMP and the oil and gas RFD scenario recognizes development on two levels; 1) number of wells permitted and 2) amount of surface disturbance associated with development. 1,440 wells you mention was just one of the assumptions used, along with other data to determine the effects of oil and gas development. The number of wells permitted is one RFD reference point, the number of surface acres disturbed per well represents another. Surpassing one of these points does not necessarily mean additional development cannot occur. One consideration is the extent of disturbance per well has reduced steadily over the planning period resulting in less disturbance impacts than anticipated per well. Should the number of wells and the level of surface disturbance exceed those analyzed in the Great Divide RMP, BLM would re-examine the RMP assumptions and compare them to actual on-the-ground impacts to determine if further oil and gas exploration and development is an appropriate action.

In the FEIS long-term disturbance has been re-evaluated using Desolation Flats specific information. The Draft utilized the information from Continental Divide/ Wamsutter II which was the most up to date information. With data developed from interim drilling the FEIS uses that data to calculate long-term disturbance, and insure compliance with the reasonably foreseeable development assessment from the Great Divide Record of Decision and Approved Resource Management Plan. Habitat fragmentation is not expected to be a principal environmental impact within the DFPA (page 4-56), "Introduction". Text clarifying well status in the various categories detailed in the Wyoming Oil and Gas Conservation Commission's records is included in the FEIS. "Plugged and abandoned" (P&A) wells are well pads that were drilled and at some point abandoned. To enter into P&A status, the wells must be plugged, abandoned, reclaimed and subsequently inspected and accepted as reclaimed by the BLM. Wells in the status of "notice of intent to abandon" (NOIA) fit into two categories, either plugged, abandoned, and awaiting reclamation or plugged, abandoned, reclaimed and awaiting acceptance by the BLM. For the purposes of analyzing long-disturbance levels, no NOIA wells are considered reclaimed. Wells listed as "dormant", "completed", "spud", or "notice of intent to abandon" are counted as long-term disturbance based on experience at the Desolation Flats. The per well long-term disturbance figure has been increased slightly to insure the figure is accurate yet still conservative. Long term disturbance within the RFO will still be below the 16,092 acres maximum provided for in the Great Divide RMP for both alternatives.

**Comment 151-12:** Visual resources.

**Response:** In the DEIS, the full text of the passage you cite reads:

> "The short term impacts would exceed the level of contrast permitted in both Class 2 and Class 3 areas; however, because the contrasts would be seen by relatively few viewers and would be short in duration in any one area during a drilling season, they would not be considered significant."

Significant or not, this information is provided to show the impacts of implementing the proposed action and alternatives, and to ensure the best decision possible is made in this matter.

**Comment 151-13:** Wildlife resources and management.

**Response:** Habitat fragmentation is not expected to be a principle impact within the DFPA (page 4-56), "Introduction". As new roads, pipelines and well site locations are proposed by the operators, the BLM will review the proposals under NEPA with site specific environmental assessment (EA) tiered to the Desolation Flats Record of Decision and in turn issue a decision

record and apply mitigations for those proposals. That, coupled with the environmental analysis in the DFPA EIS will be sufficient to satisfy NEPA requirements. Site specific decisions will be tiered to the Desolation Flats EIS and Record of Decision (ROD) and will be separate from the EIS process. Also, please refer to our response to comment 150-3a.

Migration routes for pronghorns are discussed in Chapter 4, page 4-60. Migration routes for mule deer are discussed in Chapter 4 on page 4-61. Elk migration routes are discussed on page 4-63 in Chapter 4. The DEIS at the same spot states in part:

> "Potential elk migration routes are not expected to be impacted because no linear barriers such as fences would be constructed."

This is also true for the other big game species analyzed in Desolation Flats.

**Comment 151-14:** Big Game.

**Response:** The FEIS, like the DEIS, addresses the impact of habitat fragmentation and loss of ecological connectivity on big game habitats in the DFP area and within the ranges of affected herds. Please refer to our response to comment 151-13.

**Comment 151-15:** Mountain plover.

**Response:** For the proposed action, the DEIS, on page 4-75 states in part:

> "Mountain plovers often nest near roads, feed on or near roads, and use roads as travel corridors (USDI-FWS 1999), all of which make the species susceptible to being killed by vehicles."

Further on in the text, at page 4-76 it is stated:

> "Given the implementation of mitigation measures in Sections 2.5.2.11.2 and 4.8.1.4, no adverse effect to mountain plovers are expected."

Alternative A effects are discussed on page 4-78.

**Comment 151-16:** Sage-grouse

**Response:** The sage grouse is a BLM sensitive species, listed as such on 04/09/2001. Because of this status no actions that might jeopardize the future existence or viability of this species may occur. Sage grouse populations have been declining for many years. The Great Divide Resource Management Plan (RMP) in Appendix I lists sage grouse in several areas of the Wildlife Mitigation Guidelines including 2b and 2c. 2c provides for the prohibition of surface activities or use within important habitat areas for the purpose of protecting sage grouse breeding grounds and or habitat where timing stipulations are not appropriate. The purpose of the Guidelines are (1) to reserve for the BLM, the right to modify the operations of all surface and other human presence disturbance activities as part of the statutory requirements for environmental protection, and (2) to inform a potential lessee, permittee, or operator of the requirements that must be met when using BLM-administered public lands. The Guidelines in the RMP are not specific as to the distance an action must be moved to mitigate impacts of a proposal on sage grouse. Literature reviews show that requirements for no surface disturbance (NSD) from a lek generally run in the 0.25 to 2 mile range. The ¼ mile NSD mitigation is generally a minimum distance. Additionally, another mitigation listed on page 2-38 states that no surface disturbance would be allowed within identified patches of greater sage-grouse severe winter relief habitat. 4.7.3.1.4 "Upland Game Birds" page 4-67 states in part:

> "Through seasonal closures, reclamation, avoidance, and mitigation measures, significant impacts to the greater sage grouse population would not be expected to occur as a result of implementation of the Proposed Action."

**Comment 151-17:** Prairie dogs, burrowing owls, swift fix, and black-footed ferret.

**Response:** Mitigations for white-tailed prairie dogs are discussed generally in Chapter 2, and specifically on page 2-39. The presence of white-tailed prairie dogs and the affected environment are discussed in Chapter 3, especially on pages 3-71 and 3-73. Prairie dogs are also discussed in Chapter 4, especially on pages 4-74 and 4-82. On page 4-82, "White-tailed Prairie Dog" reads, in part:

> "If white-tailed prairie dog colonies that provide suitable black-footed ferret habitat are to be disturbed, then black-footed ferret surveys would be conducted (see section 4.8.1.2.1). It is preferred by the BLM that no disturbance occur within 50 meters of prairie dog colonies, where feasible."

Expected effects on white-tailed prairie dogs are discussed in Chapter 4, especially on pages 4-74 and 4-82. It states at 4-82:

> "The anticipated disturbance of white-tailed prairie dog colonies is expected to be low, and no significant impacts to the white-tailed prairie dogs are expected."

Creating no surface occupancy restrictions on oil and gas development and protection from other surface-disturbing activities is outside the scope of the DFPA.

**Comment 151-18:** Endangered Fish

**Response:** The DEIS, in Chapter 3, at 3.8.1.2 page 3-68 states:

> "Surface water is scarce and perennial streams within the DFPA are limited to the most downstream portion of the Sand Creek drainage during wet years (see Section 3.4.2.1)."

In the next paragraph it is stated

> "None of these fish species are likely to be found in streams within the DFPA, nor has critical habitat been established in Wyoming for any of these species (Upper Colorado River Endangered Fish Recovery Program, 1999)"

On page 3-39 the DEIS states in part

> "All streams within the project area are Class 5 streams (incapable of supporting fish)" (WGFD 1991).

On page 3-37 the DEIS states:

> "There are no naturally occurring lakes or ponds in the project area."

On page 3-45, earlier in the same paragraph you quoted from, the DEIS states:

> "The quality of water in the various geologic formations underlying the Washakie Basin range from poor to good."

It is possible that produced water, if any, could have poor water quality. In Chapter 4, page 4-44 the DEIS states:

> "Methods used for the disposal of produced water (water produced in association with the gas which is separated out at the well location) would vary but would generally be accomplished by either (1) disposal in an underground injection well, (2) surface discharge or (3) surface evaporation in lined or unlined ponds. The operators would obtain the permit(s) necessary (i.e. NPDES) for the selected method. Depending on timing of availability, quantity and quality of produced water; some of the produced water could be used in well drilling and completion, and pipeline construction and hydrostatic testing."

Any water discharge to the surface would have to be approved by the Wyoming Department of Environmental Quality under a National Pollutant Discharge Elimination System (NPDES)

permit. In order to issue the permit, the DEQ must determine the proposed action will not violate the Clean Water Act and any other applicable laws, rules and regulation.

The effects of the proposed action are analyzed for Special Status fish species in Chapter 4, especially on pages 4-73, (Threatened, Endangered or Proposed for Listing Species of Plants, Wildlife and Animals, including bonytail, Colorado pike minnow, humpback chub and razorback sucker), and pages 4-76/77 (environmental effect expected to the those fishes from the proposed action), and page 4-78 for alternative A. Sensitive species of fish are also found in Chapter 4, especially on pages 4-86 and for Alternative A page 4-89. The EIS concludes that implementation of the proposed action is not likely to adversely affect these fish species.

**Comment 151-19:** NWF, WWF, and NRDC urge BLM to suspend the issuance of new APDs until a new RMP for RFO can be completed.

**Response:** Prior to Record of Decision (ROD) for the DFPA, the BLM will issue APDs in the DFPA when the proposed action complies with the guidance in the interim drilling plan. It is anticipated that this will occur prior to the completion of the on-going RMP review process.

**COMMENT LETTER 162: JODI L. BUSH, ACTING FIELD SUPERVISOR, USFWS**

**Response:** See responses to Comment Letter 145, which is a duplicate of this letter.

**COMMENT LETTER 164: SHELA BREMER, REGULATORY COORDINATOR, EOG RESOURCES**

**Response:** See responses to Comment Letter 123, which is a duplicate of this letter.

**COMMENT LETTER 165: TED KERASOTE**

**Response:** Thank you for your comment.

**COMMENT LETTER 167: LAIRE MOSELEY, PUBLIC LANDS ADVOCACY**

**Response:** Thank you for your comment.

**COMMENT LETTER 168: ANDY SHULSTAD**

**Response:** Thank you for your comment.

**COMMENT LETTER 169: BRYAN WYBERG**

**Response:** Thank you for your comment.

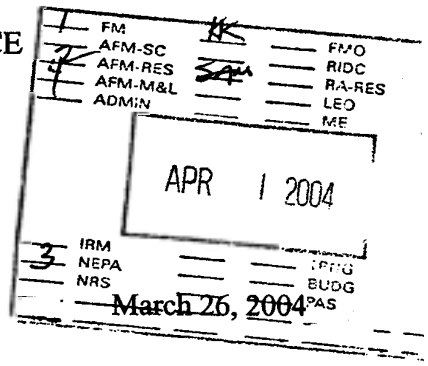
# APPENDIX A

# FORMAL AND INFORMAL CONSULTATION

# United States Department of the Interior

FISH AND WILDLIFE SERVICE

**Ecological Services**
**4000 Airport Parkway**
**Cheyenne, Wyoming 82001**




In Reply Refer To:
ES-61411/W.02/WY8087

March 26, 2004

Memorandum

To: Kurt Kotter, Field Manager, Bureau of Land Management, Rawlins Field Office, Rawlins, Wyoming

From: Brian T. Kelly, Field Supervisor, U.S. Fish and Wildlife Service, Wyoming Field Office, Cheyenne, Wyoming

Subject: Formal and Informal Consultation for the Desolation Flats Natural Gas Project

Thank you for your letter of February 24, 2004, regarding the proposed Desolation Flats natural gas project located in T13-16N, R93-96W, in Sweetwater County, Wyoming. The project includes 385 natural gas wells and associated facilities in an area where 63 gas wells currently exist. You have requested concurrence for your determination of effects to listed and proposed species from this project pursuant to the Endangered Species Act of 1973, as amended (Act), 16 U.S.C. 1531 *et seq*. The U.S. Fish and Wildlife Service (Service) is providing you with concurrence and comments based on the information you have provided in your letter as well as the biological assessment (BA) included in the *Draft Environmental Impact Statement for the Desolation Flats Natural Gas Field Development Project* (April 2003).

You have stated that two white-tailed prairie dog (*Cynomys leucurus*) complexes have been mapped within the Desolation Flats project area. The complexes total nearly 10,000 acres and may provide habitat for black-footed ferrets (*Mustela nigripes*). As you know, because of recent efforts by the Service, the Wyoming Game and Fish Department and other agencies, several areas where prairie dogs occur in Wyoming have been "block cleared" from survey requirements. Please refer to our attached letter for clarification on this matter.

At this time, prairie dog towns and complexes within the Desolation Flats project area have not been "block cleared" and may warrant surveys pursuant to the *Black-Footed Ferret Survey Guidelines* (April 1989). The Service concurs with your "may affect, but not likely to adversely affect" determination for the black-footed ferret based on your commitment to conduct surveys prior to disturbance. Should a ferret or their sign be observed you have stated that all project related activities would be modified to avoid the respective town or complex and the Service would be notified immediately.

You have stated that the Desolation Flats project area does not provide suitable habitat for Canada lynx (*Lynx candensis).* However, your letter also states that the project "may affect, but is not likely to adversely affect" the lynx. To clarify your effects determination we contacted Mary Read, wildlife biologist, of your office on March 26, 2004. Ms. Read confirmed that no suitable habitat occurred within, or near the project area. Upon reviewing the potential effects to Canada lynx she believed that there would be "no effect" to the species from this project. The Service's concurrence for a "no effect" determination is not required. However, we appreciate the information the Bureau of Land Management (Bureau) has provided and their extensive review of the species status and potential effects from this project.

You have stated that the Desolation Flats project area does not provide nesting or roosting habitat for the bald eagle (*Haliaeetus leucocephalus*). However, you have indicated that bald eagles may occasionally fly over the project area. Additionally, due to vehicular traffic on project roads, there may be an increase in wildlife-vehicle collisions, perhaps resulting in carrion that may attract bald eagles to feed. The Service concurs with your "may affect, but not likely to adversely affect" determination based on (1) your commitment to implement training for regular project area drivers that will encourage decreased speeds and other measures to avoid collisions with eagles, and (2) encourage immediate removal of carcasses from the right of way. These measures will reduce the bald eagles presence within the project area and minimize potential effects.

Your letter states that the permittee will be allowed to obtain water, for dust abatement, from wells that are not hydrologically connected to the Colorado River System. However, you further state that a third party contractor could mistakenly obtain water from a location that is indeed hydrologically connected to the system. Therefore you have requested formal consultation for your determination of effects to the four endangered fishes of the Colorado River system from water depletions from this project. In accordance with section 7 (a)(2) of the Act, the Service has reviewed the information you have provided regarding the effects. We understand that the proposed action will cause an average annual depletion of 2.30 acre-feet.

A Recovery Implementation Program for Endangered Fish Species in the Upper Colorado River Basin (Recovery Program) was initiated on January 22, 1988. The Recovery program was intended to be the reasonable and prudent alternative to avoid jeopardy to the endangered fish by depletions from the Upper Colorado River.

In order to further define and clarify the process in the Recovery Program, a section 7 agreement was implemented on October 15, 1993, by the Recovery Program participants. Incorporated into this agreement is a Recovery Implementation Program Recovery Action Plan (Plan), which identifies actions currently, believed to be required to recover the endangered fish in the most expeditious manner in the Upper Colorado River Basin.

A part of the Recovery Program was the requirement that if a project was going to result in a depletion, a depletion fee would be paid to help support the Recovery Program. On July 5, 1994, the Service issued a biological opinion determining that the fee for depletions of 100 acre-feet or less would no longer be required. This was based on the premise that the Recovery Program has made sufficient progress to be considered the reasonable and prudent alternative avoiding the

likelihood of jeopardy to the endangered fishes and avoiding destruction or adverse modification of their critical habitat by depletions of 100 acre-feet or less. Therefore, **the depletion fee for this project is waived**.

Permits or other documents authorizing specific projects, which result in depletions, should state that the Bureau of Land Management (Bureau) retains discretionary authority over each project for the purpose of endangered species consultation. If the Recovery Program is unable to implement the Plan in a timely manner, reinitiation of section 7 consultation may be required so that a new reasonable and prudent alternative can be developed by the Service.

This concludes consultation pursuant to the regulations implementing the Act, 50 C.F.R. §402.14 and §402.13. This project should be re-analyzed if new information reveals effects of the action that may affect listed or proposed species or designated or proposed critical habitat in a manner or to an extent not considered in this consultation; if the action is subsequently modified in a manner that causes an effect to a listed or proposed species or designated or proposed critical habitat that was not considered in this consultation; and/or, if a new species is listed or critical habitat is designated that may be affected by this project.

To further the conservation of the bald eagle we recommend that the Bureau contact the Service's Wyoming Field Office at (307) 772-2374 and the Service's Law Enforcement office at (307) 261-6365 in the event that a bald eagle is found injured or dead. We further recommend that any and all electrical power lines be constructed to meet the standards of the Avian Power Line Interaction Committee (APLIC 1996) to protect migratory birds, including eagles.

To further the conservation of prairie dog ecosystems we recommend that the Bureau minimize disturbance within prairie dog towns to protect the many species that depend on these unique areas such as burrowing owls, mountain plovers, black-footed ferrets, ferruginous hawks and the prairie dog themselves.

We appreciate your efforts to ensure the conservation of endangered, threatened, and candidate species and migratory birds. If you have further questions regarding our comments or your responsibilities under the Act, please contact Kathleen Erwin of my staff at the letterhead address or phone (307)772-2374, extension 28.

Enclosures (1)

cc: WGFD, Statewide Habitat Protection Coordinator, Cheyenne (V. Stelter)
WGFD, Non-Game Coordinator, Lander (B. Oakleaf)

References

Avian Power Line Interaction Committee (APLIC). 1996. Suggested Practices for Raptor Protection on Power Lines - The State of the Art in 1996. Edison Electric Institute and the Raptor Research Foundation. Washington, D.C.

# APPENDIX B

# CULTURAL RESOURCE MANAGEMENT

## CULTURAL RESOURCES MANAGEMENT

## Program Objectives

The BLM has developed a cultural resources program designed to inventory, evaluate, and manage cultural resources on BLM-administered public land and in areas of BLM responsibility. The BLM management of cultural resources (archaeological, historic, and socio-cultural properties) is in accordance with the provisions of the National Historic Preservation Act (NHPA) of 1966, as amended, and other applicable legislation.

### Identification of Cultural Resources

The BLM requires cultural resource inventories for actions involving public lands and/or federal mineral estate that include surface disturbance as a part of the action. Three classes of inventory have been established; Class III is the most intensive and the most often required for areas that have not been subjected to previous inventories or have been subjected to complete surface disturbance in the past.

Class I inventories are completed with the use of existing data from cultural resource inventory files maintained by both the BLM and the Wyoming State Historic Preservation Office (SHPO). Class I inventories serve to identify known properties and are used to determine if more intensive inventory of specific areas is appropriate. This determination is made in consultation with the Wyoming SHPO and often results in the completion of Class II or Class III inventories.

Class II inventories are statistically based sample surveys designed to aid in characterizing the probable density, diversity, and distribution of cultural properties in the area, to develop and test predictive models, and to answer appropriate research questions. Within individual sample units, survey aims, methods, and intensity are the same as those applied in Class III survey. Class II survey may be conducted in several phases, using different sample designs, to improve statistical reliability.

Class III intensive field surveys are conducted by professional archaeologists thorough pedestrian survey of an entire target area. The intent of a Class III inventory is to locate and record all historic properties and is consistent with standards in the Secretary of the Interior's Standards and Guidelines for Archaeology and Historic Preservation (48 FR 44716). Class III inventories conform to the prevailing professional survey standards for the region involved, provided that the regional standards meet or exceed the Secretary's Standards and Guidelines. Because Class III survey is designed to produce a total inventory of the cultural properties observable within the target area, once it has been completed no further survey work should be needed in the target area as long as the current standards are met. Areas with a high probability of containing buried cultural materials or known cultural materials may require additional work of professional monitoring and/or data recovery excavations. Areas that require additional work are analyzed on a case-by-case basis, depending on the proposed action and the types of cultural resources present in the project area.

### Evaluation of Cultural Resource Sites

The BLM evaluates the significance of cultural resources identified during inventory in consultation with the Wyoming SHPO to determine if the resources are eligible for inclusion in the National Register of Historic Places (NRHP). Cultural resource properties may be

considered eligible for listing on the National Register if they meet one or more of the following criteria:

- Criterion A: An historic property is associated with an event or events that have made a significant contribution to the broad patterns of America's History.
- Criterion B: An historic property is associated with the lives of persons significant to our past.
- Criterion C: An historic property embodies the distinctive characteristics of a type, period, or method of construction, or represents the work of a master, or possesses high artistic value or represents a significant and distinguishable entity whose components may lack individual distinction.
- Criterion D: An historic property has yielded or may be likely to yield information important in prehistory or history.

Those sites eligible under Criteria A, B, or C require case-by-case consultation in which the Wyoming SHPO has 30 days to reply. According to a Programmatic Agreement between the Wyoming BLM and the Wyoming SHPO, the BLM has implied concurrence for determining eligibility of sites under Criterion D of the NHPA.

- To facilitate evaluation of cultural resource values in Wyoming, the BLM has devised guidelines for determining the eligibility of archaeological and historical sites and historic trails (BLM Manual 8110.32). The guidelines supplement the National Register criteria for evaluation (36 CFR 60.4) and provide consistency across the state. Application of the guidelines ensures that significant cultural resources are recognized and managed accordingly.

Properties that encompass large areas can be deemed to have contributing and non-contributing portions. Contributing portions are seen to retain integrity of the values for which the property is considered eligible for the NRHP. Non-contributing portions are identified portions of the property which are not deemed to retain the integrity of values which would render the property eligible for the NRHP. The determination of contributing versus non-contributing portions of an eligible property can be made at any time after adequate evaluation has been conducted.

The historic Cherokee Trail is considered eligible for the National Register under Criterion A. However, some portions of the trails no longer retain the aspects of integrity necessary for eligibility. As there have been no encompassing inventories of the entire trail within the RMPPA, portions of the trail are evaluated to determine if they contribute to the eligibility of the property on a case-by-case basis. Trail segments are evaluated pursuant to the National Register criteria of integrity (location, design, setting, materials, workmanship, feeling, and association). If a predominance of criteria are met, the segment will be considered contributing to the properties' overall NRHP eligibility.

#### STANDARD PROTECTIVE MEASURES

### Description

Within the framework described above, the BLM has developed protective measures to minimize adverse effects on significant cultural resource values.

Protective measures are used in response to the actions of BLM programs involving surface disturbance. These measures include cultural resource inventories, evaluation of cultural resources located during inventory, and mitigation of potential adverse impacts on significant cultural resources. Mitigation may include avoidance, data recovery (including excavation), or other protective measures. Avoidance is the primary and preferred mitigative measure used to protect cultural resources. Consultation with the Wyoming SHPO and the Advisory Council on Historic Preservation is required when surface-disturbing actions are expected to adversely affect properties eligible for the National Register. An adverse effect to an historic property is defined in 36 CFR 800.5(1)..

Although Class III inventories are completed before any surface disturbance can begin, the BLM's opportunity to preserve significant cultural resource values in place can be precluded if cultural properties are not identified prior to initiation of an action. In cases such as this, mitigative actions such as data recovery would be implemented.

For historic trails such as the Cherokee Trail, protection measures would be carried out similarly to other historic properties if any project were found to be located within ¼ mile of a contributing portion of the historic trail. When a proposed project is outside of the ¼ mile buffer of the trail, but found to be within the two-mile viewshed that contributes to NRHP eligibility, analyses of potential impacts to the trails are conducted through viewshed analyses, on-site inspection, and photo inspection. Mitigation measures used to ensure that the contributing viewshed of historic trails are not adversely affected include decreasing the height of well tanks, using paint and topography to blend well locations into the background, mowing and reseeding pipeline corridors, and using materials that match the existing environment to construct access roads.